ATTENDING BOARDING SCHOOL:

A LONGITUDINAL STUDY OF ITS ROLE IN STUDENTS' ACADEMIC AND NON-ACADEMIC OUTCOMES

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AUTHOR'S DECLARATION

This is to certify that:

I. this thesis comprises only my original work towards the Doctor of Philosophy Degree

II. due acknowledgement has been made in the text to all other material used

III. the thesis does not exceed the word length for this degree.

IV. no part of this work has been used for the award of another degree.

V. this thesis meets the *University of Sydney's Human Research Ethics Committee (HREC) requirements for the conduct of research.*

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LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
ABSA	Australian Boarding Schools Association
ACA	American Camp Association
ACARA	Australian Curriculum, Assessment and Reporting Authority
AHRC	Australian Human Rights Commission
ARC	Australian Research Council
BFLPE	Big-Fish-Little-Pond Effect
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
COAG	Council of Australian Governments
DfE	Department of Education (UK)
ECA	Extracurricular Activity
EM	Expectation Maximisation
EPC	Expected Parameter Change
ESA	Extracurricular School Activities
ESB	English Speaking Background
FaHCSIA	Department of Families, Housing, Community Services and Indigenous Affairs
FL	Factor Loadings
HREC	Human Research Ethics Committee
IEBM	International English Big-Five Mini-Markers
IRSAD	Index of Relative Socio-economic Advantage and Disadvantage
MCEECDYA	Ministerial Council for Education, Early Childhood Development and Youth Affairs

MES	Motivation and Engagement Scale
MI	Modification Index
MLR	Robust Maximum Likelihood
NAPLAN	National Assessment Program for Literacy and Numeracy
NESB	Non-English Speaking Background
OECD	Organisation for Economic Co-operation and Development
OST	Out-of-School-Time
PASW	Predictive Analytics SoftWare; otherwise known as SPSS
PB	Personal Best
PISA	Programme for International Student Assessment
PYD	Positive Youth Development
RMSEA	Root Mean Square Error of Approximation
SAL	Student Approaches to Learning
SEM	Structural Equation Modelling
SES	Socio-economic Status
STEM	Science, Technology, Engineering, and Mathematics
SWB	Subjective Well-being
TABS	The Association of Boarding Schools
WHOQoL	World Health Organization Quality of Life Assessment

ABSTRACT

Attending boarding school has long been a part of the educational culture in Australia. For a significant number of students, boarding is a necessity due to distance from suitable schools or potential lack of resources in remote or regional areas. For other students, attending boarding school represents a choice and access to greater educational resources. Research conducted to date has been limited to relatively few boarding schools or to relatively narrow outcome measures. As a result, this research has not comprehensively assessed the role of boarding school in the outcomes of students. Guided by theories and perspectives of ecological systems, positive youth development (PYD), extracurricular activity, attachment, and experiential education, it is proposed that boarding school represents a unique socialisation setting in comparison to home or day school experiences. In the current study, structural equation modelling was used to explore the extent to which boarders—relative to day students—may gain or decline in academic (e.g., motivation, engagement) and non-academic (e.g., life satisfaction, interpersonal relationships, self-esteem) outcomes. Quantitative survey data were collected from high school students at 12 schools across Australia in each of two successive years. Cross-sectional data, controlling for socio-demographic, prior achievement, personality, and school-level factors, showed general parity in outcomes between day and boarding students; however, where significant effects emerged, they tended to favour boarders. Longitudinal analysis, which controlled for prior variance, socio-demographic, prior achievement, personality, and school-level factors, also revealed general parity in day and boarding students' gains and declines in academic and non-academic outcomes. In fact, any differences between day and boarding students appeared to be due to personality traits, prior achievement, and some socio-

demographic features. Unlike historical accounts of predominantly negative experiences of attending boarding school, the current study found no such negative effects on outcomes measured. Taken together, these findings hold implications for boarders, parents considering boarding school for their children, staff involved with day and boarding students, and researchers investigating the effect of school structures on students' academic and non-academic development. Importantly, given the lack of rigorous research and theory in this area, the current study provides a foundation for more detailed and well-designed longitudinal research into residential education settings in the future.

CHAPTER 1: INTRODUCTION TO RESIDENTIAL EDUCATION

Harry climbed the spiral stairs with no thought in his head except for how glad he was to be back. They reached their familiar, circular dormitory with its five four-poster beds and Harry, looking around, felt he was home at last.

J.K. Rowling, *Harry Potter and the Prisoner of Azkaban* (1999, p. 74)

1.1 Background and Rationale

Currently, in Australia, there are 170 independent and government boarding schools,[1] comprising approximately 19,500 students (Australian Boarding Schools Association [ABSA], personal communication, March 25, 2013), and yielding an estimated $500 million for the sector annually. There are a further 470 boarding schools in the United Kingdom and 340 boarding schools in North America.[2] Despite boarding schools representing a reasonably well-established sector within most school systems, there is surprisingly little rigorous research in Australia or internationally assessing the role of boarding school in students' academic and non-

[1] Boarding students are clustered in residential settings, often called boarding houses, boarding residences, or dormitories (hereafter referred to as boarding houses), with boarding schools comprising one or several boarding houses. Some schools are predominantly day schools, with a small boarding contingent, while others have a stronger boarding identity, consisting of greater numbers of boarders.

[2] It is difficult to ascertain the precise numbers of boarding schools as not all schools are members of their national associations, and it is these associations that tend to collect such data.

academic outcomes. Work conducted thus far has been limited to relatively few boarding schools or limited to relatively narrow outcome measures, and so findings and conclusions are susceptible to the idiosyncrasies of those individual schools, with relatively limited applicability across the sector.

As yet, no Australian work has conducted a comprehensive analysis of the role of boarding school across representative samples of schools, large numbers of students, over time, and using appropriate multivariate models to most effectively understand the unique contribution of boarding school over and above other factors that might explain student outcomes. This study—in partnership with the ABSA under an Australian Research Council (ARC) Linkage Grant—seeks to address these gaps in knowledge and research. Portions of this research project are to be published in Martin, Papworth, Ginns, and Liem (in press).

Due to the paucity of research in this area and, to date, lack of theoretical basis for much of this work, this study is largely exploratory. It is noted later that instead of posing hypotheses with specific directions of effects, a number of research questions are posed.

This research was conducted across the boarding school sector (urban and non-urban, single-sex and co-educational, denominational and non-denominational) and examined the role of boarding school over and above other factors that might explain student outcomes. It examined whole-school populations (where possible) among a sample of 12 boarding schools of different types across Australia representing the broad spectrum of boarding schools and experiences. This study involved a longitudinal, quasi-experimental design comparing the academic and non-academic outcomes of boarding and non-boarding (day) students, thus informing academic development across a range of students. The initial phase of the study

conducted systematic, large-scale quantitative analyses of academic and non-academic outcomes, establishing cross-sectional data on day and boarding students, as well as shedding light on the reliability and validity of survey measures, and mean-level differences between day students and boarding and as a function of key demographics. The second phase of the study assessed any gains or declines in academic and non-academic outcomes by assessing the same students a year later using the same measures, juxtaposing the profile of day students against boarders in the same schools.

1.1.1 The popular view of boarding.

Very few people have first-hand experience of boarding school and relatively few people closely know someone who attended boarding school. Therefore, most people's views of boarding school are often what they have gained from the media, read in books, or seen in movies. Popular fiction is replete with examples of boarding schools. For example, books such as *Tom Brown's School Days* (Hughes, 1857), *The Catcher in the Rye* (Salinger, 1951), and the Harry Potter series (e.g., Rowling, 1997), as well as movies such as *Goodbye, Mr Chips* (Wood & Saville, 1939), *Dead Poets Society* (Weir, Haft, Witt, & Thomas, 1989), and more recently, *Spud* (Marsh, Garland, & Logan, 2010) describe particular perceptions of life at boarding school. The titular character of the Harry Potter series (Rowling, 1999), describes boarding school as a "home away from home", and in his particular case, views it as a sanctuary of friends and an opportunity to expand his educational horizons beyond those available at home. While these stories are entertaining, and have some truths, the boarding school settings they describe are often quite different from the modern reality of boarding school (Kennedy, 2007). Indeed, Goldman and Hausman (2000,

para. 3), in their *New York Times* article ‘Less Austerity, More Diversity at Prep School Today’, suggested that:

> To generations of students whose syllabuses include J.D. Salinger’s “*Catcher in the Rye*”, boarding school represents the winter of their adolescent discontent; a cold, distant place where parents threaten to send their children if they don’t measure up. Parents dropped their children off in September, picked them up again in June and let the schoolmasters worry about what went on in between.

While there are many distinctive differences between the Australian boarding setting and the American prep boarding setting (discussed later) recounted by Holden Caulfield, the protagonist of *The Catcher in the Rye* (Salinger, 1951), important questions arise that set the scene for the current investigation. These questions include: (1) what is the role of boarding school in students’ outcomes, over and above student background characteristics and attributes, and (2) are these outcomes any different to those of day students?

These questions frame three possible outcomes for boarders due to their unique experience when compared with day students at the same schools. First, relative to day school, attending boarding school may have a negative effect on students’ academic and non-academic development. Second, attending boarding school may have a positive effect on students’ academic and non-academic development compared to day students. Finally, attending boarding school may yield similar academic and non-academic development to attendance at day school. The possible effects of boarding school are developed further in relation to potential conceptual and theoretical underpinnings in a subsequent chapter. Because of the dearth of research and theorising in the area of boarding schools, the current study

seeks to address gaps in the knowledge and research with a focus on students' academic (e.g., motivation, engagement) and non-academic (e.g., life satisfaction, interpersonal relationships) outcomes.

1.2 Context of the Study

1.2.1 Boarding school experience.

For a greater part of each school day across each year, boarding students reside at school, away from family for relatively long periods of time. This thesis contends that the boarding school experience establishes a unique set of circumstances and interactions that create a distinct experience for boarders, different to that to which day students are exposed. First, to a greater extent than day students, boarding school life involves an elaborate system of regulation and tight scheduling of students' daily routines—work, play, and sleep—with daily activities carried out in the immediate company of a large "batch" of others, and under constant supervision (Goffman, 1968). The boarding school dictates expectations on behaviour, participation in recreational activities, how and when homework is completed, as well as access to telephones and computers, to name a few (Cookson, 2009; Cree, 2000; Lee & Barth, 2009; Williams, 2011).

Second, in addition to formal structures, it is suggested that boarding schools develop a collective identity through traditions, rituals, and symbols. In doing so, boarding schools engender a specific sense of identity that ties the individual to the collective through a range of activities, which might include compulsory chapel, sport, cadet corps, and intra-school and inter-school competitions (Chase, 2008; Finn, 2012; Gaztambide-Fernández, 2009a; Khan, 2010). Third, as a result of these processes, the residential environment of boarding schools provides a particular ecological context, allowing boarders to engage in a different set of activities and

interactions with peers and staff. This in turn promotes different socialisation processes to those of day students, consequently providing boarders with differing opportunities for growth and development (Bronfenbrenner, 1970; Holden et al., 2010). Fourth, boarders typically spend a greater amount of time with teachers, coaches, and other school staff (e.g., boarding staff), and have greater opportunity to develop mentoring or personal relationships with them than day students (The Association of Boarding Schools [TABS], 2013). Finally, this results in differences in important interactions with caring "others"—peers, parents, and teachers/boarding staff (Cookson, 2009).

Therefore, given the nature of students who typically attend boarding school (discussed below), and the structures and processes of boarding school, this thesis seeks to examine the extent to which boarding school is an environment with distinct proximal processes, compared to the processes influencing day students. If this is the case, there ought to be different patterns of gains or declines in academic and non-academic outcomes for day students and boarders. However, this remains an open and empirical question. To date, very little research has provided empirical data to address this question, and the present study is uniquely positioned to do so.

1.3 Foreseen Yields of the Current Study

For the vast majority of stakeholders associated with boarding schools—boarders, parents, and staff—there is a shared objective that schooling for these students will result in positive academic and non-academic outcomes. Boarding school also represents a significant income for many schools and is an export earner for the education sector more broadly. Hence, good practices and outcomes are vital to sustaining this service and the sector, important to many families seeking to extend the educational offerings to their children, and a necessity to many families

due to geographical isolation. Research on the academic and non-academic outcomes of attending boarding school will augment current knowledge and better place the boarding sector to respond to the needs of various students, particularly in areas of pedagogy, policy, and pastoral care. A range of foreseen yields are envisaged from this study, including:

- answering questions that ongoing public debate has raised about the possible benefits (or otherwise) of boarding school;
- providing valuable information on the academic and non-academic outcomes of youth (including disadvantaged groups such as Indigenous young people) who attend boarding schools;
- better informing sector- and school-level policy directed at enhancing students' boarding experience;
- providing concise data on the processes and factors relevant to an enhanced boarding experience and to identify ways to operate in a more successful fashion;
- generating timely and comprehensive information on the effects of boarding school, especially for particular types of students, to assist parents' decision making as to what is the most appropriate educational option for their child;
- better identifying the nature of day students' outcomes through inclusion of them in the research design;
- assisting boarding schools to enhance specific academic and non-academic pathways in the vital years of childhood and youth; and
- more broadly, developing a program of research that is potentially generalisable to students in other residential settings.

1.4 Chapter Summary

This chapter provided a background and rationale for the present study. It considered the popular view of boarding often perpetuated through books or movies rather than peoples' first-hand experience with boarding school. It also outlined the context of the study and what may be regarded as a boarding school experience. This generated a number of foreseen yields of the current study. The next chapter provides a conceptual and empirical review to frame the study.

CHAPTER 2: CONCEPTUAL AND EMPIRICAL REVIEW

2.1 Organisation of the Conceptual and Empirical Review

The aim of the conceptual and empirical review is to establish central themes, theories, and perspectives that frame this study of the role of boarding school in students' outcomes. The review provides a historical and contextual outline of themes and issues that influence the contemporary experience of boarders in boarding schools. The review briefly considers gaps in knowledge in previous boarding school research. Based on the contextual outline, there is then a discussion of theories and perspectives that might be applied to the boarding experience to better understand the processes that may be operating in this environment. These frameworks include ecological systems theory, extracurricular activity (ECA), Positive Youth Development (PYD), and attachment perspectives.

Following this review, academic and non-academic outcomes deemed germane to the boarding experience are outlined. These include motivation and engagement (adaptive, impeding, and maladaptive dimensions), academic engagement (class participation, enjoyment of school, educational aspirations, homework completion, absenteeism), academic buoyancy, student approaches to learning (SAL) (competitive and cooperative learning, personal best goals), well-being (life satisfaction, meaning and purpose, emotional stability), interpersonal relations (peers, parents, and teachers), and involvement in ECAs. Lastly, given the potentially confounding effects of background and individual characteristics, salient covariates are also reviewed in order to better understand the unique contribution of the boarding experience. These covariates include socio-demographic factors (gender, age, language background, Indigenous cultural background), socio-

economic indicators (parents'/caregivers' education), prior achievement, personality traits, and school-level factors (single-sex/co-educational, school-average achievement).

2.2 Boarding Context—Australia

Residential education can be broadly defined as education provided in an environment where students reside and learn outside of their home environment, and usually refers to the care and education of young people and adolescents. In some cases, it is a generic term used to describe residential group care programs for at-risk, emotionally disturbed, or delinquent children (see Goldsmith, 1995). Typical forms of residential education include boarding schools, preparatory schools, military schools, foster care, or orphanages, but it is, at times, used to describe some forms of outdoor education or specially designed education programs where participants live in residence (e.g., American "charter" schools, elite sports programs, gifted and talented programs, environmental education programs) (Anderson, 2005; Goldsmith, 1995).

Residential schools have also featured historically in the education of Indigenous, native or Aboriginal peoples, especially in Australia, Canada, and North America (Neegan, 2005). In Australia, Aboriginal children were removed from their families and lived on church- or government-run Indigenous "missions", which included some basic or vocational education. Of relevance to the current study, Lee and Barth (2009) proposed that the goal of residential education programs is to "boost youth development rather than provide treatment" and that "residential education is first and foremost an educational program that occurs in a group living setting" (p. 156).

Boarding students are clustered in residential settings, often called boarding houses, boarding residences, or dormitories (hereafter referred to as boarding houses), with boarding schools comprising one or several boarding houses. Throughout this thesis, residential students are described as “boarding students” or—as they are more commonly termed—“boarders”. Some schools are predominantly day schools with a small boarding contingent, while others have a stronger boarding identity, consisting of far greater numbers of boarders, and are seen as boarding schools that include day students (White, 2004a). Students may be clustered in boarding houses in horizontal groupings (year-level) or vertical groupings (e.g., Years 7 to 12), or a combination of these models. The type of residential groupings may affect the interaction of boarders with same-age and cross-age peers as well as between students of different gender if the boarding school is co-educational. The boarding house, while being a physical entity, may also represent a unique part of a school’s traditions and culture, and thus form part of a boarder’s identity and social grouping.

Throughout several hundred years of history of boarding internationally, and over 180 years of history of boarding in Australia, attitudes and ideas towards boarding school, as well as traditions and practices in boarding schools, have changed dramatically (White, 2004a). Much of the contemporary view of boarding stems from a historical perception of boarding; however, many would argue that the last 20 years of boarding in Australia marks a new era of experience for students (Hawkes, 2010a; White, 2004a). Due to social demands, boarding schools have had to become more contemporary in terms of facilities, practices, and modern technologies, and societal expectations have meant families have enjoyed much greater contact (Wheare, 2006). As a result, for many, attending boarding school is

much less a feeling of being sent away for long periods of time and much more about parental choice and access to educational facilities for their children. Indeed, some students see boarding as advantageous (e.g., access to a structured learning environment or extracurricular opportunities) and seek to board (discussed further below) (e.g., MacGibbon, 2011; Nguyen-Emmett, 2013).

2.2.1 Defining Australian boarding.

The current landscape of boarding in Australia is different from that of the other boarding experiences overseas (Cree, 2000; White, 2004a). As opposed to boarding schools in the United Kingdom and the United States that have had a significant focus on college preparation or education of the elite, Australian boarding schools have had a greater focus on providing schooling for a wide range of children. This has particularly been the case for youth from rural or remote areas, including Indigenous youth, and as a means to overcome the tyranny of distance and lack of opportunities in these communities (Bradley, Noonan, Nugent, & Scales, 2008; Cree, 2000; White, 2004a; Wild & Anderson, 2007).

It is difficult to provide a simple definition of boarding schools in Australia. Some of these boarding schools are a colonial reinterpretation of the public schools of Great Britain in metropolitan centres (White, 2004b), while others are more contemporary institutions in regional centres that have stemmed from the necessity to meet the educational needs of geographically isolated or disadvantaged youth (e.g., rural, remote, or Indigenous youth) (Australian Human Rights Commission [AHRC], 2000a; Wild & Anderson, 2007). Many of these boarding schools also differ in the number and ratio of boarders to day students. While White (2004a) limited his definition of boarding school in Australia to represent those with proportionately larger populations of boarders, this study considers a boarding school to be a school

that accommodates any number of students on-site for the greater part of the academic year while attending to complete their normal schooling.

2.2.2 Reasons why children attend boarding school.

Historically, students have attended boarding school in Australia for a range of reasons, including geographical isolation and families wanting access to educational opportunities that may not be readily available in regional areas (see Bartholomaeus, 2006; Cree, 2000; White, 2004a; Wild & Anderson, 2007). There may also be only limited sporting, social, or cultural opportunities in these areas. Family circumstances, either parents overseas for work, parents working long hours, divorced or separated parents, single parents, or a deceased parent, are other common reasons why children attend boarding schools in Australia. For these students, boarding school represents a stable environment, an adjunct to the home, and not a replacement to the family (White, 2004a). It is also popular among parents of overseas students for access to Western education that would enable these students entry into Western universities (White, 2004a). This may also be the case for local students who see boarding school as a stepping stone to university. Among some families, there may be a perception that boarding school offers a more structured academic environment that may be beneficial for a child (Lawrence, 2005). For many boarders, attending boarding school may be a family tradition or a way for some families to reinforce their social status (e.g., Cookson & Persell, 1985; Cree, 2000). It is also more typical nowadays that students begin boarding later in secondary school—for example, in Years 10 or 11 in order to prepare for matriculation exams—rather than in younger years and hence why the majority of students board for only a few years, rather than their entire secondary school or from late primary school. This is also partly due to the added cost of boarding and families

keeping students at home and at local day schools in order to make this opportunity more affordable and partly as this time is closer to the formal end of schooling (White, 2004a). Given the educational disadvantage of rural and Indigenous youth (discussed below), it may be that school choice offers some students access to educational resources and outcomes on par with their metropolitan counterparts (i.e., day students at the same schools) (White, 2004a; see also Brighouse, 2000; Campbell, Proctor, & Sherington, 2009; Feinberg & Lubienski, 2008).

In Australia, rurality and remoteness play a significant role in the ability of youth to access inclusive and equitable education. This is particularly the case for Indigenous youth, with a number of recent government reports proposing boarding schools located near their Aboriginal communities as a way of redressing this disadvantage in a culturally sensitive way and to "close the gap" in academic and non-academic outcomes (e.g., AHRC, 2000a; Wild & Anderson, 2007). While significant funding has been provided to build these facilities, to date the academic and non-academic benefits of attending boarding school for Indigenous and other disadvantaged youth is significantly understudied. This study is able to add further knowledge in this area.

No longer are boarding schools simply attracting children from rural and remote areas, or at times, children from metropolitan areas whose parents have busy working lives. Increasingly, they are attracting students from overseas, or students more locally who choose to board so they can be involved in particular extracurricular programs, such as elite sports programs (e.g., MacGibbon, 2011; Nguyen-Emmett, 2013). With the diversifying boarding sector, it is timely that a study assesses the effect of boarding on academic and non-academic outcomes.

2.2.3 Australian parents' decision to send children to boarding school.

It is often not an easy or simple decision for parents to send their child to boarding school; parents must weigh up the advantages and disadvantages of a local versus boarding school education. While the views of the child about boarding school are important, parents ultimately make the decision for a child to attend, as they seek certain educational outcomes they feel are not available locally. Parents cite a range of reasons for sending a child to boarding school, including "dissatisfaction with local schools", "to increase later job opportunities", "the moral standard of the school", and "high standards of student behaviour" among the top reasons (Baker & Andrews, 1991, p. 23). Recent market research by Lawrence (2005) has more extensively probed the reasons why parents chose to send their children to boarding school and the key factors parents used when choosing a particular boarding school. Parents generally believed that boarding school provides a more stable, structured learning environment, and a better academic environment (even though they did not believe that students actually performed better academically).

However, while the studies of Baker and Andrews (1991) and Lawrence (2005) provide useful feedback on what parents are seeking in terms of their child's growth, they do not assess the role of boarding in personal and academic development. For many rural families, the option to send a child to boarding school is not from a sense of elitism; rather, it is influenced by the reality of farming and a desire for their children to have other life experiences or careers before possibly returning to the land. This study seeks to evaluate whether students benefit from this alternate educational pathway, compared with students who do not live away from home for their schooling.

2.3 Boarding Context—International

The United States, Canada, Australia, and New Zealand have shared very similar origins of boarding schools with the adoption of the British-colonial model of "public" schools, which included boarding (see section 2.4). However, it is contended here that boarding schools in Australia are a different type of residential institution compared with the typical English public school or American private "preparatory" or "prep" school. Australian boarding schools are usually day schools with boarding houses or residences as part of their composition. As indicated above, there are distinct differences in their colonial evolution and the types of students they service. This view of Australian boarding schools is also shared by Cree (2000) and White (2004a), who have conducted significant research into boarding schools in Australia. It is also argued that much has changed in the international boarding scene from the days of Tom Brown in *Tom Brown's School Days* (Hughes, 1857) or Holden Caulfield in *The Catcher in the Rye* (Salinger, 1951) (see also Goldman & Hausman, 2000; Wheare, 2006).

2.4 Boarding Context—Historical Perspective

In various forms, the practice of sending children away from their families for schooling is one going back over many centuries. In Europe, boarding schools were particularly effective in training the future elite, indoctrinating faith and religion, or serving as "finishing" schools. In the mid-18th century and early 19th century in the United Kingdom, education in "public schools", where a child was separated from his/her family from a young age, was perceived by the parents of those who could afford it as a normative behaviour that had positive social rewards later in life (Kashti, 1998). In the United States, many of the early private boarding schools were established by churches, but there has since been a growing number of private and

government-sponsored institutions. For many of these schools, their purpose has been predominantly college preparation (“prep schools”) and as elite schools where the wealthy are educated (Cookson & Persell, 1985). There are also quite a number of military boarding schools (e.g., Shane, Maldonado, Lacey, & Thompson, 2008) and ones that serve disadvantaged students (e.g., Bass, 2014; Curto & Fryer, 2011, 2014).

In Australia, boarding was believed to be a desirable form of education in the newly established colony to educate the elite, and rural boarding schools were desirable to teach the children of parents unable to pay the fees to attend urban boarding schools (White, 2004a). Again, these institutions were heavily run by religious orders. As opposed to the United Kingdom and the United States, which have had a significant focus on college preparation or education of the elite, contemporary Australian boarding schools have a greater focus of providing schooling for a wide range of children and their families, particularly those from rural or remote areas, including Indigenous youth, and as a means to overcome the tyranny of distance and lack of opportunities in these communities (Cree, 2000; Wild & Anderson, 2007).

Running parallel to the education of mainstream youth in Australia, the United States, Canada, and New Zealand, has been the education of Indigenous students through various forms of residential education. The most significant historical theme in regard to boarding schools for Indigenous people is that of its use to assimilate Indigenous people into the dominant society in the country in which they lived. Often the aim of these policies was for Indigenous people to become “civilised”, Christian, and citizens of the English speaking culture (Armitage, 1995; Cardinal, 1999). While there are far fewer Indigenous residential institutions than in

previous years, for many Indigenous people this has been a very negative experience and some maintain that the effects of attending boarding school have had ramifications through generations as well as at a cultural level across Indigenous communities to the present time (Barton, Thommasen, Tallio, Zhang, & Michalos, 2005; Smith, 2010). While the origins and intentions of boarding school may differ somewhat internationally, the core elements of residing at school, away from family for long periods of time for educational benefit, remain the same. It is from this perspective that this study considers the role of boarding school in students' academic and non-academic outcomes.

2.5 Boarding School—A Contentious Past and a Modern Practice

Much has been written about negative experiences at boarding school (e.g., Duffell, 2000, 2012; Partridge, 2007, 2012; Schaverien, 2004, 2011; Standish, 2011). Schaverien (2011), for example, identified a cluster of symptoms and behaviours she proposes be classified as "boarding school syndrome": patterns of trauma observable in many of her adult patients who had attended boarding school. Similarly, Duffell (2000) described the "strategic survival personality" as successive layers of personality constructed to protect the vulnerable child sent off to boarding school. The research of Elias and colleagues (2012) suggested that some ex-boarders have survived boarding school well, while others have suffered a complex history of trauma and poor mental health. Others have gone further to suggest that the abuse and trauma experienced by some ex-boarders has particularly affected Indigenous families and communities, resulting in "intergenerational trauma", a form of post-traumatic stress disorder passed on to the children and grandchildren of Indigenous people who experienced trauma, as a result of attending boarding school (Barton et al., 2005; Elias et al., 2012; Hirshberg, 2008; Pember, 2007). Other research finds

that many ex-boarders speak with ambivalence about their boarding experience, revealing both positive and negative effects of past boarding school attendance (Hirshberg, 2008), perhaps in much the same way as day students speak of their schooling experience. A recent study by Sillitoe (2010) suggests that the boarding experience can be a positive experience for some students, allowing them to develop traits which had a transference from adolescence to adulthood, and which provided protective factors for life post school. Further, recent reports suggest less incidences of racism (for Indigenous students) in boarding school than for non-boarders (Priest, Paradies, Gunthorpe, Cairney, & Sayers, 2011). Thus, there are personal and historical data suggesting contentious practices and negative effects from the boarding school experience—though there is also some evidence of positive experiences.

There are also signs the sector is modernising, with greater attention to pastoral and academic care, better facilities, and resources recognising the individual needs of students, provision of ECAs to provide a range of opportunities not often available in regional and rural areas, articulation of the responsibilities and rights of boarders, training of staff (Hawkes, 2010a, 2010b), and greater family involvement (Greene & Greene, 2006; Wheare, 2006; White, 2004a). National and state boarding sectors are also formulating standards and compliance guidelines to enhance the practice of boarding (see ABSA, 2011; Department of Education [DfE], 2013). These standards are beginning to address issues regarding academic development and student well-being. A large-scale study into the role of contemporary boarding is therefore timely.

2.6 Previous Research on Boarding Schools and Gaps in Knowledge

In addition to bringing clarity to the contested theoretical and applied terrain, this research also seeks to address gaps in prior boarding school research. To date, boarding school research has tended to focus in limited ways on aspects of student experiences, parents' decisions to send students to boarding school, or policy and management issues relating to boarding school. Research has also often focused on relatively few boarding schools or narrow outcome measures—hence, findings have been susceptible to the idiosyncrasies of individual schools with questionable applicability across the sector. No Australian work has yet conducted a scoping of boarding school across representative samples of schools, large numbers of students, over time, and using appropriate multivariate modelling to most effectively understand the unique role of boarding school over and above other factors that might explain student outcomes.

The work of Lambert (1970, 1975) is noted for its contribution to understanding the effects of residential education in the UK in the 1960s and 1970s. He concluded that boarding schools would be unlikely to survive unless they bestowed social attributes or increased life chances on their pupils, or provided a positive environment for youth whose family circumstances meant they could no longer reside at home. In the intervening years, very little research has attempted to examine the true effects of boarding school and thus the need for the current study.

The bulk of previous work comprises historical narrative or ethnographic studies of experiences outlining the experience from the boarders' perspective (Cree, 2000) and the effects of church-run boarding schools (Trimingham Jack, 2003). More recently, White (2004a) has conducted a qualitative investigation of students' views in a co-educational boarding school employing a memoir-based humanistic

approach to interpret data. Of note from these studies are the enhanced relationships with peers and family as a result of boarding. Similarly, Cree (2000) found that boarders were able to maintain positive relationships with peers and parents.

Duffell (2000) suggested that boarding has negatively affected many young boarders in the United Kingdom in terms of well-being and interpersonal relations. However, no "hard" evidence is provided as to the effects of boarding, and no significant evidence as to the role of boarding in academic and non-academic outcomes is available. More recently, TABS (2003, 2013) commissioned research to investigate the effects of modern-day boarding schools and the relative value of the boarding school experience. The report—*The Truth About Boarding*—suggested that boarders score higher on a range of academic and non-academic outcomes (e.g., academic motivation, educational aspirations, cooperative learning, life satisfaction, parent relationships) in comparison to day students at private or public schools. While this study matched students based on socio-economic status (SES), it does not appear to have controlled for other significant covariates (e.g., prior achievement, personality) or specifically compared day and boarding students within the same schools. Nor did it report the statistical magnitude of any differences.

Recently in Australia and overseas, a number of studies have focused more narrowly on a few non-academic measures, including how these outcomes change over time throughout the boarding experience or as a result of outside influences. Research by Ronen and Seeman (2007) is of some value to this study, particularly in the area of subjective well-being (SWB) (e.g., life satisfaction). Their findings highlighted that personal resources (i.e., access to social and family support) helped to maintain adolescent SWB in boarding schools even under extreme stress (see also Bramston & Patrick, 2007). However, caution needs to be applied when interpreting

these findings in relation to the current study; while useful, they do not represent the typical context for boarding, nor significant social and environmental factors that shape children in Australia. It is also important to note that their sample consisted only of boarding students.

Probably of most significance to this research project is the work of Downs (2002), who conducted a longitudinal study exploring adolescents' experiences of transition to secondary and boarding school in North Queensland. In terms of self-concept, no changes were found for boarding students as a whole sample; however, female day students reported improved perceptions of themselves at the end of the study. In another study, Bramston and Patrick (2007) examined the distress levels of adolescents leaving rural communities to attend urban boarding schools. Students in their study reported coping well with the transition from their home environments and schools to boarding school in the city and that levels of anxiety were no higher than day students at the same school. Similarly, Whyte and Boylan (2008) aimed to identify the main issues surrounding the transition of rural students to boarding school. They concluded that boarders and day students did not differ on three adjustment measures—general self, emotional stability, and parent relations—although they noted that boarders reported slightly higher relationships with parents than day students.

The general conclusion from these studies is that while attending boarding school may represent a significant transition in a child's life, given a range of support structures (e.g., peers, parents, teachers) that may be available at the boarding school, this transition to high school is no more difficult than it is for the majority of similar students who attend as day students. While these represent important Australian and international studies, limitations include there being few sites and low participant

numbers under study. The current study extends on previous research in a number of ways. Through the collection of quantitative data, the current study conducts a much larger and wider sampling of students (whole-school populations, Years 7 to 12) attending a greater number of schools across Australia. While previous studies have tended to focus on a narrow range of academic and non-academic outcomes, the current study focuses on broader sets of outcomes from these domains. The current study also includes a range of salient covariates and multivariate techniques to control for the shared variance of other covariates, thus better allowing the unique contribution of boarding to be determined. Latent modelling also purges effects of measurement error. Finally, measuring students' scores at two time points allows the effects of prior variance to be factored into statistical modelling. Therefore, the current study overcomes many of the limitations of previous research so that findings regarding the effects on academic and non-academic outcomes have greater relevance for and are more broadly generalisable across the boarding sector.

2.7 Review of Theories and Perspectives Informing a Study of Boarding School

The discussion now focuses on a number of conceptual and empirical perspectives that provide a framework through which to view and assess the role of attending boarding school and which may help to explain differences in the school experience of day and boarding students. There is no single perspective that directly informs a study of boarding school, but there are multiple perspectives and theories that provide a starting point when considering the possible role of boarding school in student outcomes. Therefore, the theories and perspectives outlined do not represent the totality of possibly relevant theories and perspectives but are deemed to be those most central to informing the current study. To the extent that the results derived

from the study may indicate the influence of other theories or perspectives, these will be addressed in the discussion in Chapter 8. The following theories or perspectives are deemed significant to framing this study—ecological systems theory, Positive Youth Development (PYD), extracurricular activity (ECA), and attachment perspectives. While they may not all directly inform the research questions which follow, they are deemed significant due to their relationship to previous research or contentions about the effects of boarding school (discussed below). For completeness, other perspectives such as experiential education are dealt with in Appendix A.

2.8 Ecological Systems Theory

2.8.1 Introduction.

Bronfenbrenner's (1979) *ecological systems theory* emphasises environmental factors as playing a major role in development. Given the distinct nature of the boarding environment, this theory is helpful in understanding particular processes and experiences acting on boarding students, over and above those of their day school counterparts at the same schools. Ecological models of human development include an evolving body of theory and research that takes into account the processes and conditions dictating an individual's development within proximal and distal contexts. Bronfenbrenner's original theory comprised several *micro*- to *macro*-environmental systems affecting development; however, this has since evolved to also include the influence of humans on their environment, now referred to as the *bio-ecological model*. The primary focus of this revised model recognised the reciprocal nature of interactions between an individual and their immediate environment by what Bronfenbrenner describes as "proximal processes". This perspective gives importance to the roles in human development of the

biopsychological characteristics of the individual and of the environments in which they live. In addition, the bio-ecological model considers development as a continuum—a process throughout the course of life and across successive generations—whereas the original ecological systems model was primarily concerned with the formative years of human development (Bronfenbrenner, 2000).

In fact, early work by Bronfenbrenner (1970), prior to the publication of his ecological systems theory in 1979, sheds light on a number of processes relevant to boarding school: that of the influence of peers and of other primary adults outside the family. Bronfenbrenner's study compared the effects of environment on the development of day and boarding students. Bronfenbrenner explored the role that attending boarding school played in the process of socialisation, comparing boarding students (n = 188) and day students (n = 165) in 12 fifth-grade classes equally distributed across three boarding and three day schools in Moscow. He hypothesised that day students had one primary socialising agent (parents), whereas boarding school students had two or more socialising agents (parents, boarding school/staff). Thus he proposed that the children's "collective" (i.e., grouping within the boarding school) played a primary role in the socialisation process. He suggested that:

> whatever he [a boarding student] does—be it academic, recreational, or social—he does not as an individual but as a member of his collective … which is an integral part of the … collective of the entire school—[thus becoming] a pervasive, enduring, and primary source of the child's security and satisfaction. (p. 181)

In comparison, he proposed that day students were under a similar school environment during the day, but once they left at the end of the day, they fell under the influence of two major settings—the family and neighbourhood peers, thereby

experiencing greater diversity in socialising agents. His study found that children raised primarily in a monistic socialisation setting (i.e., boarding school) had different outcomes of socialisation (i.e., adult-approved values) than those exposed to pluralistic settings (i.e., day students). He concluded that children brought up primarily in a single socialisation setting are more likely to conform to the social pressures in their immediate environment, and therefore the boarding environment played an important role in shaping academic and non-academic development for these students.

2.8.2 Ecological systems relevant to boarding.

2.8.2.1 Microsystem.

While the bio-ecological model revision has advanced the ecological systems theory in more recent years, the earlier notion of successively nested systems is still important to understand from the perspective of boarding schools and the influences of differing environments on day and boarding students (see Figure 2.1). An important feature of this model is the distinction between environments and processes and the notion that environments are the contexts affecting development. The model begins with the individual (and their attributes) at the centre and set within the first layer of the *microsystem*. The microsystem is the pattern of activities, social roles, and interpersonal relations that most immediately and directly affect the individual's development. These can include the institutions and groups that provide such settings as family, school, and peer group: "It is within the immediate environment of the microsystem that proximal processes operate to produce and sustain development" (Bronfenbrenner, 1994, p. 39). Cross and Frazier (2010) used Bronfenbrenner's ecological model to describe the environment and interactions of

students attending a specialised science, technology, engineering, and mathematics (STEM) school. They suggested that:

> The microsystem becomes their room in a residential hall, with neighbors replaced by peers. These students do not only have to learn who they are, they are affected by an entire alteration in their environmental system. (Cross & Frazier, 2010, p. 35)

Therefore, the boarding environment potentially represents a unique environment that might affect the academic and non-academic outcomes of students.

For approximately 40 weeks of the year, boarders live away from home, their family, and early childhood or neighbourhood friends. Going away to boarding school causes changes at the microsystem level, requiring a re-establishment of these relationships, as well as the formation of new relationships with new teachers and peers. Thus, the boarding environment establishes new proximal processes that affect the development of boarders. Coleman (1987) described how the structured institution of school provides a certain class of inputs into the socialisation process, beyond the environment of the family home, and that for "those few children in boarding schools, a portion of that environment may be found within the boarding school, which constructs for the child a temporary household" (p. 35). Cree's (2000) study found that boarding school did not diminish boarders' relationships with parents. Similarly, Whyte and Boylan's (2008) study of rural primary students transitioning to secondary boarding school in Australia concluded that boarders and day students did not differ in the three adjustment measures of general self-concept, emotional stability, and parent relations. This suggested that attending boarding school has little effect on parent relations, and a further study by Bramston and

Patrick (2007) revealed that “adolescents reported coping well with the transition from rural and remote family homes and schools to board” (p. 247).

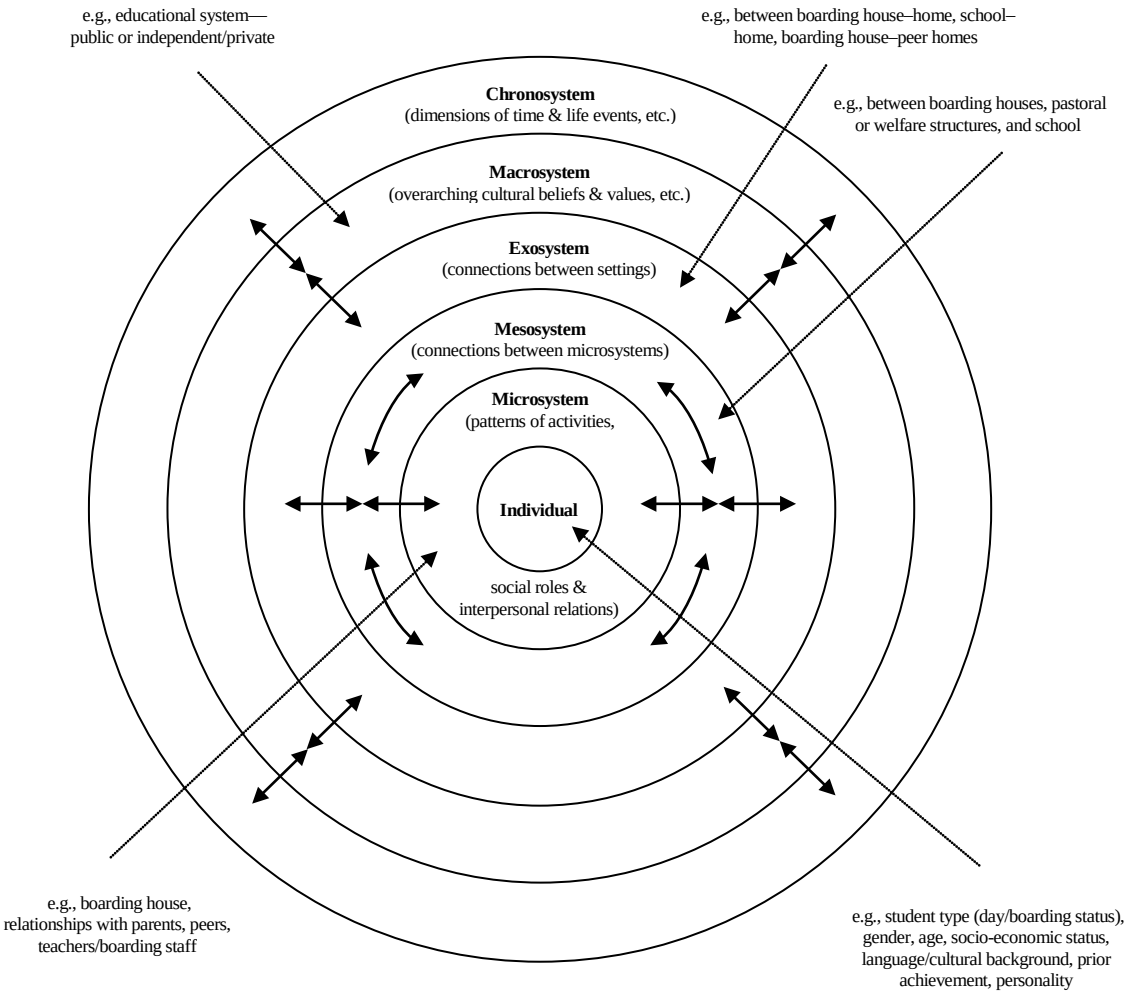

Figure 2.1. Adaptation of Bronfenbrenner’s (1994) ecological systems theory to incorporate proximal processes and environments influencing boarding students. The chronosystem (sociohistorical conditions and time over the life course) can be considered to overlay and act in a third dimension in the diagram.

In contrast, White's (2004b) study of Anglo-Australian and overseas students' attitudes reveals that respondents believed that boarding encouraged independence from the family, provided a multicultural atmosphere, and "represented an adjunct to the home as the source of primary group social value, not necessarily replacing the role of the family but co-existing with it, as part of the secondary social system of the boarding school" (p. 65). As previously noted, much has been written about the negative experiences of some boarding students and the effect this has had on family relationships (see "boarding school syndrome" in Duffell, 2000, 2012). This has also been the case for many students attending Indigenous residential schools (see Adams, 1995; Elias et al., 2012; Knockwood & Thomas, 1992; McBeth, 1982; Robbins et al., 2006; Smith, 2010). This is discussed more fully later in this chapter.

Taken together, it is apparent that the boarding environment acts as a mechanism for development at the microsystem level. The question this raises is whether this environment is a *de facto* family and peer environment while boarders are living away from home, thus providing similar proximal processes to day students, and therefore similar academic and non-academic outcomes. Applying Bronfenbrenner's (1979) theory, this is a central question of this thesis: due to the differences in ecological environments, to what extent do day students and boarders show differences in academic and non-academic outcomes?

2.8.2.2 Mesosystem.

The next layer of systems involves the relations between microsystems and is referred to as the *mesosystem*. The mesosystem includes the connections and processes occurring between two or more settings in which the individual is involved. These can include relations between home and school, family and peer

experiences, and in the case of boarders, between home and the boarding house, processes and systems of management of one boarding house and that of another within a school, boarding houses and other pastoral or welfare structures within a school (e.g., year coordinators/advisors), or between boarding houses and the overarching school. Cree (2000) described how individual boarding houses within a school can have their own characteristics and philosophies, which may have little to do with the intentions of the school. He suggested that they are a product of past transitions and influences, with "evidence that the process of indoctrination and cultural reproduction commences" (p. 105) when new students arrive at boarding school, and that these processes begin to define the development of boarders. In the boarding school context, several boarding houses within the school may in effect create a local neighbourhood whereby events and activities in one boarding house may indirectly affect individuals in another boarding house (Cree, 2000).

The number and quality of connections between the settings in which the individual is involved also has important implications on development; for example, connections between parents and teachers, or in the case of boarders, between parents and boarding staff. While there is no research that has considered the effect of boarding on these relationships, there is limited research that has considered parental reasons for choosing boarding for their children. Australian parents choose boarding school for a number of reasons, including: (a) a stable and structured learning environment, (b) a better academic environment, (c) contributions to a child's character, and (d) opportunities to participate in ECAs (Lawrence, 2005). In the United States, those choosing military boarding schools cited discipline, structure, responsibility, self-sufficiency, and college preparation as reasons by parents (Shane et al., 2008). It is clear from this research that there are many

considerations outside of the primary needs of the individual, and between microsystems, that act on students attending boarding school. While not directly investigated in the current study, it is helpful to consider the interactions of microsystems and how these might influence the outcomes of boarding at the mesosystem level, as well as how attending boarding school may influence these factors.

2.8.2.3 Exosystem.

The subsequent layer after the mesosystem is described as the *exosystem* and includes the connections and processes occurring between two or more settings, of which at least one does not involve the individual directly, but indirectly (and externally) influences the individual. Typically, these include economic, political, government, educational, and religious systems. For a child, this may include the linkage and processes between the home and a parent's workplace; while the child may not be directly involved in the workplace, events there may affect a parent, which in turn affects the child. Anderson (2005) identified the interaction of a number of systems within residential care settings, or boarding education more broadly, where "each setting has an environment which is specialised in terms of education, health, social care, custodial care, or any combination of these to address the specific needs … with the main nurturing role, the residential staff" (p. 22).

The influence of socio-economic, political, governmental, and religious systems at the exosystem level are also evident in boarding schools, and boarding schools influence these systems as well. The Australian Human Rights Commission (AHRC, 2000b) identified education as a human right and that governments and communities must provide access to quality education to overcome distance education issues and to meet the needs of students who live in rural and remote areas,

who are particularly disadvantaged (see also Bourke, 1997). The longitudinal study by Sanchez and Martinez (2007) of young people living in boarding schools in Spain also found the socio-educational and employment trajectories of boarders were different from those of young people living with their families, with the best predictors being academic performance, parents' level of education/occupation, and type of family residence. Research by Curto and Fryer (2011) estimated the effect of attending urban public boarding schools in the United States for students of low SES and found that attending such schools was a cost-effective strategy to increase achievement among these students. Historically, many boarding schools have been established and run by various church organisations. Again, at the exosystem level, the effects of religious systems on outcomes of students are evident (Hoffer, Greeley, & Coleman, 1985). The historical narrative of Trimingham Jack (2003) described the experiences of former students and nuns at an Australian Catholic boarding school, identifying that the purpose of these boarding schools was often to perpetuate the social order and religious ideals.

2.8.2.4 Macrosystem.

Bronfenbrenner (1994) described the next layer as the *macrosystem*, consisting of "the overarching pattern of micro-, meso-, and exosystems characteristic of a given culture, or subculture, with particular reference to the belief systems, bodies of knowledge, material resources, customs, lifestyles, opportunity structures, hazards, and life course options that are embedded in each of these broader systems" (p. 40). This description attempted to go "beyond basic labels of class and culture to identify more specific social and psychological features at the macrosystem level that ultimately affect the particular conditions and processes occurring in the microsystem" (p. 40). It would appear that boarding schools may

play a part in shaping beliefs and cultural values of groups of people (e.g., Indigenous people) as well as being shaped by them. This is notable in two key areas: cultural value and the sense of privilege (both discussed below). Thus, the overarching boarding system within a school may be seen to be representative of the macrosystem.

Most studies of macrosystem level factors, such as cultural values, have investigated how a student's cultural identity has affected their boarding experience (Alexander-Snow, 2010, 2011; Han, Jamieson, & Young, 2000), and therefore their academic and non-academic outcomes. However, few have investigated the effect of boarding school on cultural values or a people's collective sense of cultural identity. In Australia, debate has focused on whether it is better to educate Indigenous children in their own communities or to send Indigenous children to boarding schools for a mainstream education and to be immersed in the English language, rather than a traditional Aboriginal way of life in their home communities (AHRC, 2008). Much has been written about the experiences of Indigenous people and the negative effects of boarding school on cultural identity and the diminution of their Indigenous way of life (Adams, 1995; Armitage, 1995; Elias et al., 2012; Grant, 1996; Jack, 2000; McBeth, 1982; Neegan, 2005; Pember, 2007; Smith, 2010; Voyer, 2007). While it might be argued that boarding schools have the potential to shape cultural identity, Yeo (2010) provided an alternate point of view that overseas students coming to Australia have demonstrated the potential to maintain their cultural group identity in the boarding house environment, proposing instead that group identity was an important driver of how these boarders perceived the boarding school experience.

A number of authors also contended that some boarding schools are environments that perpetuate societal and institutional power structures and gender ideologies (Chase, 2008; Gaztambide-Fernández, 2009b; Khan, 2010; Saveth, 1988). In the Australian context, Cree (2000) also suggested that boarding schools play a central role on behalf of a social class or group in reproducing important socio-economic elements and that it is the complex interaction between these systems—the boarders' home culture and the school culture—which is the basis for the reproduction of a rural elite. Poynting and Donaldson (2005) go further in arguing that the sometimes "brutal" and "hard" processes ascribed to some elite Australian boarding schools are essential features in developing the characteristics of ruling-class masculinity. However, in contrast to this notion, Kashti's (1988) study of boarding schools identified them as environments that may act as accelerators of societal and cultural change, and that in various historical periods and cultures, the boarding school facilitated processes that concerned its societal contexts: establishing, strengthening, or changing political-cultural agendas in these countries (Kashti, 1998). In this way, it is important to consider how macrosystem influences may be relevant in a study of the role of boarding school.

2.8.2.5 Chronosystem.

The final layer of the model extends the environment to include the influence of time. The *chronosystem* encompasses life events and transitions that occur throughout an individual's life, but also the environment in which the individual lives. For a student, key transitions or life events may include starting school, transitioning to high school, attending boarding school, and graduating from school. Other events may include parental divorce, death of a loved one, changes in employment, physiological changes that occur with the growth of an individual, or

periods of long-term illness—all of which may cause the individual to react differently to environmental changes and which interact with other systems.

Time is an important factor to take into consideration as part of this research. Time has shaped current perspectives and popular opinions of boarding, as well as the development of boarders while attending boarding school. At its extreme, time may be seen as a measure of the long-term effects of boarding—for example, in terms of benefits such as social status or deficits such as trauma passed down intergenerationally (Barton et al., 2005; Elias et al., 2012; Hirshberg, 2008; Pember, 2007). While the early history of boarding in Australia and internationally may be a negative one, the contemporary view of boarding appears to be much more positive in providing regional and rural students access to quality education. To determine whether boarding may make a unique contribution to the academic and non-academic outcomes of students, this research considers whether the proximal processes of boarding act over time, by assessing the longitudinal gain or decline in these outcomes compared to day students.

In the present study, understanding the role of hypothesised predictors was enhanced by accounting for prior variance in the dependent measures via the estimation of autoregressive paths (MacCallum & Austin, 2000; Martin, 2011). Autoregressive paths link variables at Time 1 with corresponding variables at Time 2 (i.e., the path between Time 1 motivation and Time 2 motivation). As a result, factors predicting Time 2 variables (e.g., motivation) can be more appropriately viewed as uniquely predictive constructs (Martin, 2011). This is important given that prior academic and non-academic outcomes are often significant predictors of subsequent academic and non-academic outcomes (see Reynolds & Walberg, 1992). Essentially, then, time is included in the design of the current study to provide a way of

examining the effects of predictive paths on the dependent measures after controlling for Time 1 variance in these dependent measures. In the current study, student type (day/boarding status) predicting Time 2 outcomes can be more properly viewed as predictive of gains or declines because they represent positive or negative residuals after prior variance has been partialled out (Martin, 2011; Martin, Ginns, Papworth, & Nejad, 2013). Hence, incorporating time in this design enables the examination of gains or declines in academic and non-academic outcome measures, having controlled for Time 1 variance in these outcome measures. In accordance with Bronfenbrenner's (1994) ecological systems theory, time is therefore an important factor reflected in the historical changes to the boarding sector, as well as to the individual during their time at boarding school.

2.8.3 Ecological systems and boarding school.

Taking both the layers and contexts identified above together, it can be hypothesised that various elements of attending boarding school act as proximal processes in the development of boarding students. The layers of Bronfenbrenner's (1994) ecological systems model provide a useful framework to assess whether aspects of systems that may influence day students and boarders do so in differing ways (see Figure 2.1).

This study utilises the ecological levels in broad terms as deemed relevant to the phenomena and processes under question and therefore the assignment of factors to a particular level in the ecology are only generally aligned to those specified by Bronfenbrenner (1994). Thus, while there is considerable overlap with the ecological systems model, the specific nature of this study regarding the role of boarding school required some modification to better enable the educational processes under focus to be characterised within this framework. Hence, the current study particularly focused

on factors of the individual and day/boarding school and how these changed over time. As outlined below, student, school, and time factor sets were hypothesised to reflect such a range. Because the residential ecology of boarding school is encompassing, it is important that student factors chosen for the current study reflect a wide range of attributes and proximal processes that could affect academic and non-academic development more broadly. In the present study, student-level factors comprise student type (day/boarding student), socio-demographic factors (e.g., gender, age, language background, Indigenous cultural background, parents'/guardians' education), prior achievement, and personality (e.g., agreeableness, conscientiousness, extraversion, neuroticism, openness).

At the student level, outcomes also include a range of academic (e.g., motivation and engagement, academic buoyancy, student approaches to learning) and non-academic (e.g., life satisfaction, extracurricular activities, interpersonal relations) measures. At the school level, data were collected on school structure (single-sex male, single-sex female or co-educational) and school-average achievement. Time, as previously described, was modelled through autoregressive paths in which academic and non-academic outcomes were assessed twice, one year apart. Moreover, consistent with Bronfenbrenner (1986), the inclusion of both "social address" (e.g., gender, language background, parent education) and "person-process" factors (e.g., personality and its role in a longitudinal context), as well as exploring for moderation between student type (day/boarding status) and covariates (e.g., personality), provided a further basis for answering developmental questions. Should boarding schools provide distinct proximal processes (compared with those experienced by day students), then EST would suggest positive effects of attending boarding school.

2.9 Positive Youth Development

2.9.1 Introduction.

While adolescent development has been a topic of interest for researchers examining leisure, sport, and other structured activity involvement for some time (e.g., ECAs), it has only been since the 1990s that this perspective has received greater attention from developmental researchers (Busseri & Rose-Krasnor, 2009). *Positive Youth Development* (PYD) is an asset-building orientation of development whereby the strengths and competencies of youth are emphasised and promoted, rather than the risks, problems, and deficits of adolescents (Benson, Leffert, Scales, & Blyth, 1998; Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004).

The PYD perspective attempts to counterbalance the deficit model of youth development that was the hallmark of early researchers and clinicians. The PYD framework considers young people as a resource worth fostering and prioritises the inherent potential of young people to become positive and constructive contributors to society, in contrast with earlier perspectives that focused on adolescents as "broken" and needing repair (Damon, 2004; R. Lerner & Lerner, 2012). The PYD approach also acknowledges that while adolescents may face developmental challenges, these are normal aspects of growing up. The goal of PYD is to promote positive outcomes regardless of an individual's regulatory capital (R. Lerner & Lerner, 2012). The PYD framework identifies the importance of the individual-ecological context on the outcomes of young people and thus provides the opportunity to investigate whether the individual-boarding context has a significant role in academic and non-academic outcomes of boarders compared to day students. Among the various factors examined by PYD, youth involvement in extracurricular and community-based activities is often emphasised (e.g., Benson et al., 1998; R.

Lerner & Lerner, 2012). In many ways, PYD fits under the banner of structured activities and there is considerable overlap with ECA (discussed next) and ecological systems theory (previously discussed) in its approach of considering the relationships of individuals and their ecological contexts. Evidence of the effects of ECAs and theoretical models of ECA and ecological systems models similarly apply and have often been adopted by PYD researchers (Busseri & Rose-Krasnor, 2009).

The shift in thinking towards PYD introduces a critical concept of "plasticity" of development (R. Lerner & Lerner, 2012) and that the trajectories of these adolescents can be significantly influenced by environmental factors in their homes, schools, and communities (R. Lerner, 2006). R. Lerner, Bowers, Geldhof, Gestsdottir, and DeSouza (2012) suggested that positive development occurs when the plasticity of adolescent development is aligned with the features of their complex environment. This may be particularly challenging for adolescents given the nature of social and ecological changes occurring during this period of development (R. Lerner et al., 2012). This conceptualisation allows the multiple pathways that young people may take through adolescence to be seen as pathways to possible positive development and for adolescents to be viewed as resources to be developed, rather than as damaged, needing repair, and to be made like adults (Damon, 2004; Larson & Rusk, 2011;R. Lerner, 2005).

As R. Lerner et al. (2012) described, "social change is not only a ubiquitous but a necessary feature of the relational developmental system" (p. 120). Despite adolescence often being viewed as a time of manifold problems (e.g., in terms of depression, drug and alcohol use, and maladaptive behaviours), for most young people it does not represent a time of substantial trouble or "storm and stress" (Eccles et al., 1993; Larson & Rusk, 2011; R. Lerner, 2005; Masten, 2004). As is

outlined in further detail under attachment theory below, while teenagers are naturally moving away from their parents and spending greater amounts of time under the influence of peers, the parent-child relationship remains important to them (see Ainsworth, 1989; Allen, 2008; Bowlby, 1988). Adolescence, therefore, represents a time of plasticity, a very natural and dynamic course of development from childhood through to adulthood, and PYD emphasises the significance of these mutually influential relations between individuals and their contexts (R. Lerner & Lerner, 2012). For some students, attending boarding school may represent one such opportunity for plasticity and development. The current study seeks to better understand the role of boarding school, as distinct from day school, in affecting academic and non-academic outcomes of these two groups of students.

2.9.2 Features of Positive Youth Development.

Hamilton, Hamilton, and Pittman (2004) proposed three different but interrelated ways that PYD can be conceptualised:

1. as a natural process of development
2. as principles or a philosophy of youth programming
3. as a range of practices whereby the principles are applied as instances of youth programs, organisations, and initiatives focused on fostering the healthy or positive development of youth.

Since this conceptualisation of PYD, various models of the developmental processes thought to be involved in PYD throughout adolescence have been advanced (e.g., Benson et al., 2006; Benson, Scales, & Syvertsen, 2011; Damon, 2004; Larson, 2000; R. Lerner et al., 2005). All of these models of adolescent development are premised on *relational developmental systems* conceptions of human development (e.g., Overton, 2010), which “emphasise that change across life

occurs through mutually regulative relations between individuals and their contexts (represented as individual ←→ context relations)" (R. Lerner et al., 2012, p. 119). Similar to Bronfenbrenner's (1994) ecological systems model, these models posit that "all contextual levels are involved in these *individual ←→ context relations*, including the institutions of society, culture, the designed and natural environment, and history (temporality)" (R. Lerner et al., 2012, pp. 119–120). The passage of time represents the forces that have shaped and will shape development in the future and thus represent a contextual level that permeates all other levels of organisation within an individual's developmental system across the lifespan (R. Lerner et al., 2012; see also Bronfenbrenner & Morris, 2006; Gottlieb, 1997, 2001).

A key assumption of relational developmental systems theories is that youth have sufficiently diverse and complex developmental systems that they can adapt and find ways to integrate individual strengths with that of their contextual environments. It is from this perspective that PYD adopts the convergence of thoughts regarding plasticity, adaptive developmental regulations, and thriving in order to see young people as "resources to be developed" (Roth & Brooks-Gunn, 2003). In addition to this, the PYD perspective is framed by a key idea that individual ←→ context relations are significant processes in the development of youth (Benson et al., 2006; R. Lerner, Lerner, Lewin-Bizan et al., 2011).

2.9.3 Boarding as a form of Positive Youth Development.

PYD may also be seen as a philosophy or approach to youth activity programming that goes beyond simple ECAs and specifically focuses on promoting youth thriving, applying this approach to both the operationalisation of activities and outcomes of these programs (R. Lerner & Lerner, 2012). Moreover, Roth and Brooks-Gunn (2003) suggest that the goals of youth development programs include

both the promotion of positive development as well as the prevention of negative outcomes. Therefore, boarding schools need to be more than places where students reside under the care of adults if they are to fulfil the criteria of PYD. In terms of how this philosophy is delivered, three fundamental characteristics of effective PYD programs are suggested (Blum, 2003; R. Lerner, 2004; R. Lerner, Lerner, von Eye, Bowers, & Lewin-Bizan, 2011; Roth & Brooks-Gunn, 2003). The "Big Three" criteria are:

- positive and sustained adult-youth relations that provide young people with the opportunity to engage with competent, caring adults, continually available for at least a year and who may include non-familial adults such as a mentors, coaches, or teachers;
- life-skill building activities that provide young people with the opportunity to enhance skills that allow them to select positive life goals, optimise their capacity to achieve these goals, and compensate for any obstacles that may hinder their developmental progress; and
- opportunities that provide young people with the chance to participate in and lead valued family, school, and community activities.

As a form of PYD, boarding schools may provide students with unique socialisation opportunities and support structures while away from home (Bronfenbrenner, 1970; Coleman, 1987), which play important roles in the positive development of boarders. The role of alternate, caring adults in the development of academic and non-academic outcomes of students is described throughout this conceptual and empirical review. Boarders typically spend a greater amount of time with adults of this type (e.g., teachers, coaches, and other school staff) (TABS, 2013). There is also evidence which has suggested that boarding houses provide a

range of supportive relationships with peers and staff, which foster developmental outcomes (White, 2004b). Further evidence has suggested that boarders have greater opportunity to develop mentoring or personal relationships with other students and teachers, as they typically spend more time (nine hours per week) with each other and engaging with teachers, coaches, and school staff outside of class time than do private day and public school students (four hours per week) (TABS, 2013).

The boarding environment may positively develop youth through the long-term relationships formed with boarding staff, by boarders contributing to the lives of other boarders and activities out-of-school hours, as well as via academic and ECAs in a safe environment supervised by trained staff (Anderson, 2005; Hawkes, 2010a). A number of studies on transition to boarding school have found that positive and caring staff-student relationships were an important factor in facilitating this transition (e.g., Bramston & Patrick, 2007; Mason, 1997). Thus, while boarders are away from their families and communities, and therefore the positive ecological assets these provide, boarding school may provide access to a range of other ecological assets that help boarders to cope with this experience and to develop positively. A PYD perspective would suggest that the effects of attending boarding school (i.e., on academic and non-academic outcomes) would be generally positive and this can be tested in the current study.

2.9.4 Relevant theoretical conceptions of Positive Youth Development.

2.9.4.1 Stage-environment fit and expectancy-value models.

Eccles and colleagues' contribution (see Eccles & Gootman, 2002; Eccles & Wigfield, 2002) to the study of PYD has focused on explaining how a "fit" between individual characteristics (e.g., expectations, values) and contextual variables (e.g., schools, families, and youth programs) contribute to the healthy, positive

development of adolescents (e.g., Wigfield & Eccles, 2002). According to stage-environment fit theory (Eccles et al., 1993), mismatch in the fit between the needs of developing adolescents and changes in the social contexts in which they live (e.g., home, school) raises the possibility of negative psychological changes associated with development. Much of Eccles' work is premised on *expectancy-value* models of motivation, which consider the roles of motivational beliefs, values, and goals as drivers of the positive development of adolescents. There is evidence to suggest that for certain types of students who attend boarding school there is a reasonable and comparable fit to these schools, as there is for day students (Bramston & Patrick, 2007; Cree, 2000; Whyte & Boylan, 2008; Wigfield & Eccles, 2002).

However, for others, this fit has not been the case and instead such students have developed a "strategic survival personality" as a protective mechanism to adapt to the boarding environment (Duffell, 2000), resulting in extensive and long-term negative developmental outcomes (e.g., Partridge, 2012; Schaverien, 2004; Standish, 2011). Also, for many Indigenous youth, removal from family to attend a residential school did not represent a fit with their family and cultural values, in the process suffering a loss of cultural identity (Cardinal, 1999; Glenn, 2011; Hirshberg, 2008). The current study investigates the expectancy-value fit of day students and boarders by comparing students whose development is fostered by different home-school contexts against any gain or decline in academic and non-academic outcomes that may be evident over the course of this study.

2.9.4.2 Motivation, active engagement, and real-life challenges.

Larson (2006) described PYD as "a process in which young people's capacity for being motivated by challenge energises their active engagement in development" (p. 677). Further, he believed that youth possess "tremendous built-in potential for

growth" (p. 682) and are agents of their own development. Larson sees *out-of-school-time (OST) activities* as key program contexts in which youth can develop skills and competencies necessary for negotiating the real world and facilitating their own positive development (Balsano, Phelps, Theokas, J. Lerner, & Lerner, 2009; Eccles & Gootman, 2002; Mahoney, Larson, & Eccles, 2005). Research by TABS (2003) indicated that a greater proportion of boarders than private day students or public day students felt that their experience of school cultivated a range of non-academic skills (e.g., self-discipline, maturity, independence, cooperative learning, critical thinking) that would help them once they left school. It may also be the case that boarders find their schools to be more academically challenging than day students or students who attend public schools (TABS, 2003, 2013). There appears to be no difference in a number of other non-academic outcomes (e.g., self-concept, adaptation to high school) when day students and boarders transition to high school and there appears to be no negative developmental effects on these over time (see Downs, 2002; Whyte & Boylan, 2008). Taken together, this suggests that there may be little difference in the effects of transitioning to secondary school for day or boarding students and that attending boarding school has little effect on these outcomes.

2.9.4.3 Breadth and intensity of engagement.

Both Busseri, Rose-Krasnor, Willoughby, and Chalmers (2006) and Bohnert, Fredricks, and Randall (2010) provided a theory-based framework for studying involvement in structured or organised activities as contexts for PYD based on two key dimensions: breadth and intensity of participation. Also included in the framework provided by Bohnert et al. (2010) is the inclusion of time, to take into consideration changes that occur in development across the lifespan (Rose-Krasnor,

Busseri, Willoughby, & Chalmers, 2006). Notably, the Bohnert et al. (2010) perspective also considered the dynamic person-ecology interactions with that of characteristics of the organised activity context (e.g., the variety and type of activities, quality of activities, activity norms, level of structure, opportunities for skill building, relationships with adults, and peer affiliations and interactions) and how these program characteristics influenced participation dimensions. Bohnert and colleagues suggested that socio-demographic, individual, family, peer, school, and neighbourhood factors are all-important predictors of participation in organised activities (see also Huebner & Mancini, 2003). Thus, to better understand the unique contribution of boarding on academic and non-academic outcomes, a range of individual attributes and socio-demographic covariates are modelled in this study to partial out any variance due to these covariates.

2.9.4.4 Individual ←→ context relational processes and thriving.

Longitudinal research by Lerner, Lerner, and colleagues (e.g., R. Lerner & Lerner, 2012; R. Lerner, Lerner, von Eye et al., 2011) has added significantly to the understanding of PYD by shedding light on the individual and ecological interactions that need to operate in order to promote thriving and that may also be related to lower levels of risk/problem behaviours. Their perspective is premised on developmental system models and highlighted the mutually regulative relations between individuals and their contexts (individual ←→ context relations) and that these relationships change throughout the course of life. In this way, a key strength of this model is recognition of the overarching influence of time (history or temporality). Again, there is evidence that PYD may positively affect academic and non-academic outcomes of adolescents, if particular resources, opportunities, and

challenges are available (e.g., *4-H Study of PYD*, R. Lerner & Lerner, 2012; R. Lerner et al., 2005).

R. Lerner and colleagues' (2005) perspective highlights the reciprocal relationship between the individual and boarding school, which in tangible and intangible ways one is shaped by the other (van der Westhuizen, Oosthuizen, & Wolhuter, 2008). As the history of boarding schools have shaped the current context in which boarders find themselves, so too each student's life history (temporality) has shaped and continues to shape his/her development into the future. The work of R. Lerner and colleagues again highlights the importance of examining the effects of covariates and contextual factors, as well as time, when examining the differences in academic and non-academic outcomes of day and boarding students.

2.9.4.5 Core constructs of Positive Youth Development.

Benson and colleagues (2006) have made significant contributions to the study of PYD by identifying commonalities between the various perspectives and also by providing a vocabulary to unify current thinking in this area. Of particular note has been their vision of PYD as valuing the strengths of youth and that of the communities in which they live, coining the concept and term of "developmental assets" (R. Lerner, Lerner, Lewin-Bizan et al., 2011)—that is, internal or individual assets and external or ecological assets (Benson, 2003; Benson et al., 2011). In the current context, for example, internal assets include age, gender, prior achievement, or personality and external assets include day/boarding status.

One of Benson's major contributions to the field of PYD has been a proposition of core constructs that synthesise key features of the perspectives proposed above, namely: developmental contexts, individual characteristics,

individual developmental strengths, positive outcomes, and negative outcomes (Benson et al., 2006). Each of these is incorporated in the present study.

2.10 Extracurricular Activities

2.10.1 Extracurricular activities and adolescent development.

Following ecological systems and PYD theories, perspectives on *extracurricular activities (ECAs)* may also shed light on possible boarding school effects. In this study, ECA is defined as any out-of-class involvement that absorbs students' time, attention, and energy (Marsh & Kleitman, 2002). Mahoney, Larson, and Eccles (2005) propose a number of criteria that can be used to assess whether an activity is deemed an extracurricular activity. These include that the activity is voluntary and not a requirement for graduation, the activity is structured and led by one or more adults, and the activity is challenging and requires effort. Attending boarding school is, by and large, voluntary as boarders cannot be forced to stay against their will (Cree, 2000; Wheare, 2006; White, 2004a) and many students seek out the opportunity to board (MacGibbon, 2011; Nguyen-Emmett, 2013). Well-structured forms of ECA include sport, music, drama, art, student leadership, and the like (e.g., Shulruf & Wang, 2013). Less structured forms of ECA include sleep, homework, television, computer games, social networking platforms (e.g., Facebook), friends, and hobbies. Boarding, and the activities within it, is structured and typically lead by one or more adults (i.e., boarding staff). Attending boarding school also represents a challenge, to varying degrees for different students, as it is quite different from a student's home environment. When viewed along this broad continuum, it is evident that attending boarding school may be seen as a form of ECA—it is typically out-of-class and absorbs students' time, attention, and energy. In general, ECAs have included both extracurricular school activities (ESAs) and

out-of-school time (OST) activities. Out-of-school time activities can be further classified into structured (e.g., music lessons) and leisure activities (e.g., playing with friends). ECAs are often activities requiring the active participation of individuals and provide an environment for expression of an individual's identity or interest in a particular activity (Marsh & Kleitman, 2002). Thus, attending boarding school can be seen as similar to participating in ECAs as students are involved in school-based, yet out-of-class, structured and unstructured activities that require participation alongside other individuals in a common pursuit.

Many factors influence the development and socialisation of young people, including family, peers, school, and the media. While family and peers provide the dominant influences, school also provides a range of opportunities and contexts that influence adolescent development (Marsh & Kleitman, 2002). These experiences provide an essential platform for academic and non-academic development as well as psychological development and further education for life beyond school. Therefore, it is important to investigate factors that may promote or interfere with students' ability to succeed while in school, and the boarding context represents one such factor. In view of this, Marsh and Kleitman (2002) believed the central question of this debate is how students should spend their time for maximum academic, psychological, and social benefits in order to promote future development. Schools provide a major structural context for peer group interactions during adolescence through their collection of adolescents into large groups for long periods of time. While the formal curricula of schools is significant and important, the informal curricula and pattern of ECAs of schools may be seen to influence personality development and socialisation by supporting or inhibiting the form of tangible and intangible benefits received from participation in such activities (Holland & Andre,

1987). It is on the relationship between ECAs and adolescent development that this section of the literature review focuses.

Researchers investigating ECAs have long been interested in the relationships between participation in ECAs and academic and non-academic attainment of adolescents (Feldman & Matjasko, 2005; see also Shulruf & Wang, 2013). However, Feldman and Matjasko (2005) noted that despite the large amount of literature focusing on the contexts of adolescent development, the role of ECAs has not been a significant feature in this research, even though they are often important settings for adolescent development (see also Farb & Matjasko, 2012). ECAs do not exist in a singular context but instead are nested in schools and communities and as such are functions of the resources (e.g., family, peer, school, and neighbourhood) of those contexts (Feldman & Matjasko, 2005). Boarding school represents one such context and thus the role of boarding school as an ECA is considered. Although various mechanisms and models have been proposed, it is generally believed that ECAs provide a means for young people to express and explore their identity, create social and human capital, and provide a challenging setting outside of the classroom and the home that benefits diverse academic outcomes (Farb & Matjasko, 2012; Feldman & Matjasko, 2005; Marsh, 1992; Marsh & Kleitman, 2002). However, Shulruf (2010; see also Shulruf & Wang, 2013) contended that it is still unclear what it is about the nature of ECAs that causes developmental outcomes, or whether a causal relationship exists at all.

2.10.1.1 Zero-sum model.

The *zero-sum model* (Coleman, 1961; see also Marsh, 1992) postulates that many ECAs exist in social and athletic domains, and that participation in them is in competition with, and may detract from time spent on, more traditional academic

pursuits. This leads to a zero-sum gain through ECA participation; that is, time spent in one area is at the expense of time spent in another. To date there is no boarding school research that has considered the gains versus losses of attending boarding school as might be suggested by the zero-sum model. There are many historical accounts of negative experiences of boarding where some boarders have not benefitted from the experience, instead suffering trauma, developmental damage, and difficulty in maintaining intimate relationships later in life (see Partridge, 2012; Schaverien, 2011; Standish, 2011 for "boarding school syndrome" and Duffell, 2000, 2012 for "strategic survival personality" of "boarding school survivors"). In some ways, it might also be argued that for many Indigenous people, attending residential schools was a zero-sum gain. In gaining in a number of academic areas, many lost in non-academic areas (e.g., cultural identity). Therefore, a key question that the zero-sum model raises is whether day students or boarders differ in their academic and non-academic outcomes and indeed whether there is a gain or loss in these outcomes over the course of their schooling as a function of boarding school membership.

2.10.1.2 Developmental model.

In contrast to the zero-sum model, the *developmental model* (Holland & Andre, 1987) sees ECAs as experiences that foster the development of many non-academic, and to a lesser extent academic, outcomes in individuals. This approach proposes that time spent involved in a particular activity provides a particular set of socialisation experiences that facilitate development of self-esteem, positive adjustment, and the like. The results of Fredricks and Eccles' (2005) study are consistent with prior research showing the developmental benefits of extracurricular participation. The results indicated that ECA participation was related to more favourable academic, psychological, and behavioural adjustment with adolescents

involved in athletic and school involvement activities reporting significantly higher school belonging than non-ECA participants. The study also establishes support for the hypothesis that association with a prosocial peer group moderated the effects of ECA participation on positive development. Marsh and Kleitman (2002) contended that, in so doing, ECAs have the potential to "build character, develop skills in a variety of non-academic areas, and lead to more well-rounded, socially adept, and mature students" (p. 471). This approach suggested that time spent involved in ECAs acts as a proxy for particular socialisation experiences that cause holistic development of the children involved.

2.10.1.3 Developmental-ecological model.

The *developmental-ecological model* (Bronfenbrenner, 1979; Szapocznik & Coatsworth, 1999) attempts to explain the relationship between ECA participation and adolescent adjustment by allowing for the influence of various contexts to change according to the developmental stage of the individual (Farb & Matjasko, 2012; Feldman & Matjasko, 2005). The developmental-ecological model highlights the importance of context (i.e., the ecological system of the family, school, and neighbourhood contexts) in the development of young people as well as taking into account how participation in ECAs changes over the course of adolescence (see Farb & Matjasko, 2012; Luthar, Shoum, & Brown, 2006). Blomfield and Barber's (2010) recent study found numerous positive associations between ECA participation and developmental indicators for Australian adolescents, suggesting that ECAs play a critical role in adolescent development. The ecological context is also an important consideration when investigating the effects of boarding school on academic and non-academic outcomes.

Boarding schools each have their own unique context that may be different from that of the overarching school, including processes of indoctrination and enculturation particular to that environment, which defines the development of boarders from their initial moments of boarding (Cree, 2000). As was described previously in consideration of boarding school with regard to ecological systems theory, Coleman (1987) suggested that formal institutions such as schools (including boarding schools) can provide a social environment and processes for the development of youth. For example, Chase (2008) in her book *Perfectly Prep: Gender Extremes at a New England Prep School*, outlined how boarding schools in the United States and their traditions provide a particular socio-cultural context that shapes adolescent development, particularly how individuals construct their own sense of privilege, social hierarchy, and gender identity (see also Cookson & Persell, 1985; Finn, 2012; Gaztambide-Fernández, 2009a). As noted previously, Bronfenbrenner (1970) also proposed that the boarding house was a particular ecological context in the socialisation process, different from that acting on day students (see also Cross & Swiatek, 2009). Similarly, White (2004b) highlighted how the boarding house—through the supportive relationships of peers and staff (personal, informal, and holistic)—fostered a sense of independence and embracing of multiculturalism in overseas boarders.

In contrast, Downs' (2002) longitudinal study of student transition to high school found no significant differences in self-concept and adaptation to high school between day and boarding students at Time 1 or Time 2, and that students maintained overall stable self-concept throughout the year. That is, differences in ecological context between day students and boarders did not result in differences in terms of transition to high school or self-concept over the year. This is further supported by

the research of Whyte and Boylan (2008), who similarly found no significant difference between boarders and day students on three adjustment measures (general self-concept, emotional stability, parent relations). Of those studies conducted, there remains a mixed picture of the role that boarding has as a specific ecological context in the development of boarders, and hence the current study aims to resolve some of the contentions raised.

2.10.1.4 Identification/commitment model.

The *identification/commitment model* (Marsh, 1992) hypothesises that ECAs have the potential to "improve school identification, involvement and commitment in a way that enhances more narrowly defined academic outcomes as well as the non-academic outcomes emphasised in the development model" (Marsh & Kleitman, 2002, p. 471). This model predicts that positive outcomes are maximised if the student is involved in multiple forms of participation in school-relevant activities (Finn, 1989), and that this participation engenders a sense of belonging and identification with school that benefits academic outcomes. As a result, ECAs within a school context have the potential to increase identification/commitment to school and in turn these can have positive effects on both academic and non-academic outcomes (Marsh, 1992; see also Barber, Eccles, & Stone, 2001; Eccles & Barber, 1999). The study of Fredricks and Eccles (2005) supported Finn's (1989) participation-identification model, which established that extracurricular involvement increases students' identification and engagement with school, resulting in academic benefits from this increased identification. It is contended that boarders often regard themselves as being the "heart and soul" of the school yet seem to maintain their own identity and culture in the boarding house. This is suggestive of an identification/commitment to the boarding house more than an

identification/commitment to the school, probably in part due to the greater time spent in the boarding house after hours than in class or at home with their families (Cree, 2000). Thus, on the one hand, boarders may feel a greater sense of identification/commitment to the boarding house/school, but a reduced or ambivalent sense of identification/commitment to the school. In contrast, White (2004b) highlighted how the boarding house facilitated identification and commitment to the school (see also Downs, 2002). Currently, there is no empirical evidence regarding how boarding school affects identification and commitment to school; that is, whether it is different for day students or whether there are gains or losses due to the boarding experience. In the present study, this is operationalised through questions about valuing of school, enjoyment of school, and educational aspirations.

2.10.1.5 Social inequality gap reduction model.

The *social inequality gap reduction model* (Marsh & Kleitman, 2002), based on work by Coleman and colleagues (Coleman, Hoffer, & Kilgore, 1982; Hoffer, Greeley, & Coleman, 1985), examined the ability of ECAs to equalise educational opportunity in an entirely different context. This model predicts that ECAs will have greater positive benefits for lower SES students than higher SES students, thereby reducing the size of the academic achievement gap (Marsh & Kleitman, 2002). Recent research again confirms that youth from lower SES have lower rates of participation in ECAs than youth from higher SES families (Ferrar, Olds, Maher, & Gomersall, 2012). Covay and Carbonaro (2010) found that the association between extracurricular activity participation and non-cognitive skills (e.g., task persistence, planning, management, independence, cooperative learning, peer and teacher relations) and cognitive skills (e.g., memory, thinking, reading comprehension) depends in part on students' SES. Their findings highlighted how ECAs in childhood

require a site to practise and develop non-cognitive skills for these to benefit the academic outcomes of students.

In the Australian context, rural students have been reported to be disadvantaged in a number of ways: access to education, quality and retention of staff, limited subject choices, and lower levels of parent education and income (Bourke, 1997). This is especially the case for Indigenous children in rural and remote areas of Australia, who face a variety of impediments to receiving quality education, especially access to schools (Auditor-General, 2011). In terms of educational outcomes, Indigenous students are significantly behind those of non-Indigenous students in key areas of enrolment, attendance, participation, literacy, numeracy, retention and completion (Australian Bureau of Statistics [ABS], 2012; Ministerial Council for Education, Early Childhood Development and Youth Affairs [MCEECDYA], 2008; Sarra, 2003). When compared in national benchmark tests, the results showed a significant gap in the educational performance of remote Indigenous students compared with students in all other locations (AHRC, 2008). Due to mounting evidence, in 2008 the Council of Australian Governments (COAG) set specific and ambitious targets for “closing the gap”, which in broad terms aimed to improve the school outcomes of Indigenous students by 2020 (Carapetis & Silburn, 2011). Historically, while residential education was a popular method to assimilate Indigenous youth into mainstream society, the evidence suggests that, in Australia and internationally, boarding schools have not closed the gaps in educational attainment between Indigenous and non-Indigenous people (Smith, 2010). This raises the question as to whether the modern boarding experience of Indigenous students is different from the historical picture of residential education described earlier.

The Australian Government recently established a number of programs to construct boarding facilities as a way of improving access to education and closing the gap for Indigenous children living in remote areas (Department of Families, Housing, Community Services and Indigenous Affairs [FaHCSIA], 2009; Productivity Commission, 2011). Boarding schools have been suggested to potentially benefit Indigenous students and communities as a way of targeting school attendance and retention through to Year 12 (see Recommendation 55, *The Little Children Are Sacred* report in Wild & Anderson, 2007). Therefore, there is a need to examine the educational value in these students attending boarding school.

A study by TABS (2003, 2013) compared the experiences of boarding students (n = 248), private day students (n = 212), and public day students (n = 268) in the United States and found that after equating students based on SES, boarding school was seen to aid in the development of a range of non-academic skills (e.g., self-discipline, maturity, independence, cooperative learning, critical thinking). While boarding schools are often thought of as the exclusive domain of youth from high SES families to further enrich their academic environment, there is growing interest in the potential for this model of education to be adapted for low-income youth or youth in foster care (Lee & Barth, 2009). As previously noted, Curto and Fryer (2011) found that attending urban public boarding schools established for students of low-SES was a cost-effective strategy to increase achievement among these students. Thus this study seeks to further explore a number of these contentions.

It is evident from research into the benefits of ECAs, and more specifically boarding school (described above), that residential education has the potential to reduce the educational and developmental inequalities experienced by disadvantaged

students if it is made available to them (see Bass, 2014). The current research, therefore, has the potential to answer this question: What are the benefits of attending boarding school for disadvantaged youth (e.g., Indigenous or rural youth)?

2.10.1.6 Prosocial peers mediation model.

The *prosocial peers mediation model* (Fredricks & Eccles, 2005) suggested that participation in ECAs leads to more favourable outcomes because it facilitates membership in a prosocial peer group (see also Eccles & Barber, 1999; Mahoney et al., 2005). This model suggests that involvement in ECAs helps to determine how adolescents spend their time, by influencing their selection of friends and status within the school, and in turn, the peer culture that acts to shape the norms and values to which individuals are exposed (Eckert, 1989; Eder & Parker, 1987; Fredricks & Eccles, 2005). Limited research that has been conducted has yielded mixed evidence regarding the role that prosocial peers play in mediating the relationship between ECA participation and academic outcomes (see Darling, Caldwell, & Smith, 2005; Fredricks & Eccles, 2005). A recent study by Fredricks and Eccles (2005) demonstrated that prosocial peers partially mediated the relationship between participation in ECAs and a range of academic and non-academic outcomes, explaining some of the positive associations between ECA participation and school engagement and lower levels of depression.

In terms of the role of boarding schools in peer group influences, research by TABS (2013) found that 75% of boarding students reported being in an environment with motivated peers, whereas 71% of private day and 49% of public students felt this was the case. The Ronen and Seeman (2007) study of boarding school students in Israel highlighted personal resources (i.e., support of peers) as salient in adolescents maintaining SWB even under extreme stress (e.g., threat of war);

however, the generalisability of this study is limited as it did not compare the experiences of day students. Downs (2002) also noted that peer relations were pertinent to boarders in determining their adaptation to boarding school. In contrast, the article by Poynting and Donaldson (2005) outlining the perspective of the peer climate in Australian elite boys' boarding schools does not describe the culture of these boarding schools as containing prosocial peers, but instead a culture of "initial loneliness, bonding in groups demanding allegiance, attachment to tradition, subjection to hierarchy and progress upward through it, group ridiculing and punishment of sensitiveness and close relationships, severe sanctions against difference, brutal bodily discipline, and inculcating competitive individualism" (p. 325). While not all Australian boarding schools are of this nature, this example raises the question as to the types of boarders in these schools and the constitution of the boarding environment, particularly peers, to influence the academic and non-academic outcomes of boarders. Feldman and Matjasko (2005) contend that it is the association with a prosocial peer group, as opposed to something inherent about the ECA itself, that leads to gains in some academic and non-academic outcomes. The prosocial peers mediation model received further support from extant research (e.g., Barber, Stone, Hunt, & Eccles, 2005; Blomfield & Barber, 2010; Mahoney, Larson, & Eccles, 2005). In terms of the present study, the prosocial peers mediation model poses the question as to whether day students and boarders differ in the quality of their interpersonal relationships with peers.

2.10.2 Extracurricular activities and boarding school.

In what ways might boarding school facilitate similar benefits as outlined for ECAs? Boarding houses are distinct environments that enable students to develop relationships with peers and supportive adults (e.g., boarding staff and teachers) in

out-of-school hours that require mutual trust and commitment. Whether through leisure activities, participation in other ECAs, or homework completion, boarders have greater opportunity to develop mentoring or personal relationships with other students and teachers, as they typically spend more time (nine hours per week) with each other and engaging with teachers, coaches, and school staff outside of class time than do private day and public school students (four hours per week) (TABS, 2013). Finally, boarding houses may provide students with a supportive, yet challenging, environment—physically, mentally, emotionally, and socially—outside of the classroom, which helps to maintain contact with the school environment as is the case for other school-based ECAs (Feldman & Matjasko, 2005; Finn, 1989; Fredricks, 2012; Fredricks & Eccles, 2005). If boarding school does act as a form of ECA, then this would be evidenced in positive academic and non-academic outcomes.

In a longitudinal study of young athletes (N = 327) attending an elite sport school, Elbe, Szymanski, and Beckmann (2005) found that volitional skills (i.e., self-regulation skills important for achievement in school and necessary for maintaining long-term life goals, otherwise described as “the will” or determination to succeed) developed more favourably in athletes living in the boarding school compared to those living at home (day students). Busy modern lifestyles and the heavy work commitments of parents have seen threats to students’ social capital, including threats to the norms, the social networks, and the relationships between adults and children that are of value for children and youth development (Coleman, 1987). Coleman (1987) suggested that:

> The opportunity lies in the possibility that new institutions, designed expressly for childrearing, can do so better than a system in which most

> childrearing occurred as a by-product. The general shape of the demand for a new institution is clear: It is a demand not for further classroom indoctrination, nor for any particular content, but a demand for child care: *all day; from birth to school age; after school, every day, till parents return home from work; and all summer*. They must be institutions that induce the kinds of attitudes, effort, and conception of self that children and youth need to succeed in school and as adults. (pp. 37–38)

Many of these elements of social capital (Bourdieu, 1973) exist in boarding houses, raising the question of whether boarding as a form of ECA has a positive effect on the development of youth.

2.11 Attachment Theory

2.11.1 Introduction.

Attachment theory is a socio-emotional theory of development. While early theorising portrayed the biological mother as the principal attachment figure, this has since been expanded to include other significant figures that may provide a consistent caregiving role over a period of time, such as that which may be provided by peers, teachers, adults, and between individuals (e.g., Ainsworth, 1989; Allen, 2008). Attachment theory is considered the dominant approach to understanding infant and early childhood social development, leading to a significant body of empirical research that has considered the formation of children's close relationships and the effects of these relationships on lifelong development (Cassidy & Shaver, 2008; Jacobsen, Edelstein, & Hofmann, 1994). Although there has been extensive research regarding the attachment of infants and preschool-aged children, research on the attachment of adolescents—the primary subjects in this study—to parents and

other attachment figures is more limited (Scott, Briskman, Woolgar, Humayun, & O'Connor, 2011).

The central tenet of attachment theory is that an individual needs to form a secure relationship (attachment) with at least one primary caregiver to allow for normal social and emotional development to occur. The attachment is represented by an affectionate bond or relationship between an individual and an attachment figure. The process of attachment begins in infants based on the child's need for safety, security, and protection, and in response to social interactions with caregivers who are sensitive and responsive to their needs. It is the quality of these social interactions that is important rather than the amount of time spent interacting (Bowlby, 1969a). As the child develops and becomes more mobile, these attachment figures (with whom they have had consistent interactions) represent a secure base from which to explore. The caregivers' responses during these interactions lead to the formation of patterns of attachment, which in turn lead to the formation of "internal working models", which guide the individual's perceptions, emotions, thoughts, and expectations in later relationships (e.g., Ainsworth, 1989; Bretherton & Munholland, 2008).

Interestingly, one of the leading proponents of attachment theory, John Bowlby (1952), was himself a boarder from the age of seven, as was common for children of his social status in the United Kingdom at that time. Bowlby did not enjoy his boarding experience and as a result does not endorse boarding for children of such a young age (Schwartz, 1999), although he does consider boarding schools appropriate for older children, particularly if the child is maladjusted or from a difficult home environment. He argued that for these children, boarding school offers the advantage of maintaining a child's all-important ties with family and the home,

even if in a slightly attenuated form, and, as boarding school was a common social practice of most Western communities at that time, a child attending boarding school was not likely to feel different from other children. He also saw benefit, in that time spent away from parents for part of the year may have allowed some parents to develop more favourable relationships with their children when they are at home together (Bowlby, 1952).

2.11.2 Attachment and parenting.

The contemporary view of identity formation during adolescence emphasises the role of security of attachment in fostering interdependence within the family, while at the same time facilitating adolescent self-regulation, individuation, and exploratory behaviour. Attachment to family and community facilitates this process of development and the growing independence of adolescents from parents does not need to be at the expense of emotional attachment to parents or acceptance of parental values (Baumrind, 1991b). Research indicates that parenting behaviour and interactions influence children's later development. For example, early attachment-promoting parenting practices have been associated with beneficial psycho-social and behavioural outcomes in adolescence (Washington & Dunham, 2011). Also, authoritative parenting qualities—which are typically characterised by a fine balance of both warmth and strictness—have been found to be positively related to children's higher quality relationships in young adulthood (e.g., Dinero, Conger, Shaver, Widaman, & Larsen-Rife, 2008; Nosko, Tieu, Lawford, & Pratt, 2011; Seiffge-Krenke, Shulman, & Kiessinger, 2001). Similarly, longitudinal research (Nosko et al., 2011) has demonstrated that more positive parent-child relations in adolescence were also related to a more secure attachment style in adulthood.

Overall, parental involvement during early adolescence has generally been found to be positively associated with achievement (Hill et al., 2004). However, the effects are moderated by socio-demographic variables such that students of higher parental education tend to have fewer behavioural problems and therefore more favourable achievement; students of lower parental education tend to have lower levels of educational aspirations, but parental education was not directly associated with children's behaviour or achievement. Students' ethnicity is also found to moderate the link between parental involvement and achievement (Hill et al., 2004), such that parents' academic involvement was positively related to achievement for African Americans but not for European Americans. Importantly, however, it seems it is the type of parental involvement that matters more than the quantity of engagement. Thus, parental effect is moderated by quality of parental engagement (Hill & Tyson, 2009). This raises the question of what effect separation from parents will have on a child's relationships with parents and subsequent academic and non-academic outcomes for those who board. The present study seeks to address this question.

2.11.3 Development of attachment in adolescence.

This review of the literature focuses primarily on attachment during adolescence and how it pertains to adolescent development and well-being given the age of students involved in this study. Research into adolescent development reveals that adolescent autonomy is most easily established against a backdrop of secure relationships and not necessarily at the expense of attachment relationships with parents. It is a "normal" part of adolescent development to spend significant time away from the influence of parents (e.g., attending school), while not necessarily decreasing the quality of the parent-child relationships (Freeman & Brown, 2001;

Scott et al., 2011). A central feature of attachment theory is the notion that children are constructing internal working models of relationships out of interactions they have with attachment figures (Sabol & Pianta, 2012), which continue to develop throughout childhood to adulthood, assisting individuals to cope with relationships across their lifetime (Bowlby, 1969a, 1969b, 1998). While attachment behaviours may change, research supports the continued influence of attachment bonds between children in adolescence and their parents. Studies have shown that a secure attachment with parents in adolescence predicts better non-academic outcomes (e.g., self-esteem, life satisfaction, college adjustment, greater perceived social support) (Armsden & Greenberg, 1987).

Early adolescence is significantly influenced by developmental processes, family relationships, and changes in the current environment (Allen, 2008; Moretti & Peled, 2004). In the context of these changes, academic outcomes often decline, while at the same time the long-term implications of a decrease in academic performance increases. The present study controls for this natural decline in academic outcomes by comparing the results of boarders directly against day students. It also assesses any gain or decline in outcomes after controlling for prior variance (see Chapter 4). The substantial role that families play, through their relationships with school, and their parental involvement in promoting academic and non-academic achievement, has been highlighted (Hill & Tyson, 2009). Secure adolescents have supportive relationships to bridge gaps in space and time, equipping them to endure the effect of daily challenges they may face (Ainsworth, 1969; Freeman & Brown, 2001). Therefore, adolescents may be naturally well-equipped to deal with the changes and challenges associated with boarding.

Attachment theory is particularly useful for understanding adolescent development, as it is during this time of socio-emotional change that children begin to consider more intimate or supportive relationships that may exist outside of the family and it is possible for adolescents to integrate other significant attachment figures into their relationship schemata (Allen & Manning, 2007). Even though adolescents may be replacing parents with new sources of primary attachment, attachment to parents and the internal working models of these relationships remain influential into adolescence and adulthood (Ainsworth, 1989). Therefore, in a study of the role of boarding school, a reduction in time spent with parents may not be important or evident in terms of measures of parent-child relationship. Despite the significance that others play in the lives of young people, researchers have only recently begun to examine the functions that attachments to people other than parents might serve during adolescence (e.g., Armsden & Greenberg, 1987; Hazan & Shaver, 1987; Laible, Carlo, & Raffaelli, 2000). The current study seeks to understand the role of the boarding environment in adolescents by examining the difference in interpersonal relationships of day students and boarders. Assessment of the security of attachments is beyond the scope of the present investigation but as these are referred to in Chapter 8, for completeness they are described in Appendix B.

2.11.4 Effects of peer relationships on adolescent development.

Attachment theory also provides an important framework for understanding how peer relationships develop in adolescence and in adulthood (e.g., Cassidy & Shaver, 2008). While attachment theory has tended to focus on the attachment of children to their parents, more recent evidence has shown that attachment to peers may also be an influential source of social and emotional support (e.g., Gorrese & Ruggieri, 2012; Laible, 2007; Laible et al., 2000; Wilkinson, 2010). This may also be

the case for boarders, whereby the pupil-centred culture and relationships with peers are a major influence on all who are living in the same residential environment (Anderson, 1994; see also Lynch, 1998). Cross and Swiatek (2009) highlighted how academically gifted adolescents felt a greater sense of social support and acceptance by peers when living in a long-term residential setting. Similarly, boarders may also find themselves in an environment in which there is greater influence and motivation from peers (TABS, 2013). In contrast, Poynting and Donaldson (2005) portrayed the peer climate in elite Australian boys' boarding schools as being one of initial loneliness, competitive individualism, and condemnation of secure relationships. Duffell (2000) added that acceptance into the boarding peer group often came at a cost to the individual, who is desperately seeking to belong as they replace the security of the family with that of peers, and as a result they need to develop a false self or public image to survive (see also Marsh, 2011).

Peer relationships have an effect on adolescents that is distinct from that of parent-child relationships (Kerns, 2008). For adolescents, the role of the parent remains that of being a secure base and available when needed while they explore the emerging world outside of the security of the family (Bowlby, 1988). Alternatively, peers begin to represent key agents of development within individual social networks (Berndt & Keefe, 1995), and during this phase of development individuals show the capacity to form enduring attachment-type relationships with other significant people outside of the family (Gorrese & Ruggieri, 2012).

To what extent do these emerging relationships with peers have an effect on academic and non-academic outcomes? Jacobsen and Hofmann's (1997) study, after controlling for social class, gender, IQ, perspective taking-ability, and prior competency, found that secure attachments during adolescence were associated with

more favourable academic outcomes (see also Swenson Goguen, Hiester, & Nordstrom, 2011). Evidence has consistently shown that boys and girls exhibit different attachment behaviour patterns in their relationships, with females more attached to their peers than males (e.g., Armsden & Greenberg, 1987; Berndt & Keefe, 1995; Gorrese & Ruggieri, 2012; Syed & Seiffge-Krenke, 2013). In terms of age differences in peer attachment, Gorrese and Ruggieri (2012) showed that the correlation between age and peer attachment was non-significant, although it may be that peer attachment behaviour evolves over the course of adolescence and young adulthood. Liem and Martin's (2011) study of Australian adolescent students (N = 1,436) found that peer relationships (both same-sex and opposite-sex relationships) positively influenced the academic performance and general self-esteem of the students in distinctly different ways. School engagement appeared to have a salient role in mediating the effects of peer relationships on academic and non-academic outcomes. As in the present study, school engagement was operationalised via enjoyment of school, valuing of school, class participation, educational aspirations (all positive predictors), and disengagement measures (a negative predictor). The findings of Liem and Martin's study revealed that adolescents higher on academic motivation, academic engagement, academic performance, and general self-esteem were also more positive in their relationships with peers (Liem & Martin, 2011; see also Liem, Lau, & Nie, 2008).

The review of recent literature highlights the importance of multiple attachment figures in the lives of young people in promoting healthy adolescent adjustment, although there is contention as to whether peers or parents are more influential on adolescent adjustment (e.g., Laible et al., 2000; Nada Raja, McGee, & Stanton, 1992). As mentioned earlier, attending boarding school may not necessarily

be an “either-or” situation, of losing attachment with parents but gaining attachment to peers, but instead a mixture of both parent and peer attachment resulting in positive academic and non-academic outcomes as boarders are able to maintain relationships with parents and peers in similar ways to day students. In this situation, parity in the outcomes of boarders and day students in terms of relationships with parents and peers—and therefore on a range of academic and non-academic measures—is to be expected.

2.11.5 Individual differences in adolescent attachment strategies of coping and well-being.

The emerging picture of the effects of secure attachments on well-being is that adolescents with more positive relations to parents and peers report greater well-being (e.g., life satisfaction) (Armsden & Greenberg, 1987). Regardless of the balance in favour of parents or peers, what appears to be important is that adolescents have a range of secure attachments and this is related to fewer mental health problems, including lower levels of depression, anxiety, and feelings of personal inadequacy (Allen, 2008; Kerns & Stevens, 1996; Kobak & Sceery, 1988; Nada Raja et al., 1992). Relevant to the current study, adolescents with secure attachments are better able to manage the transition to high school more successfully, enjoy more positive relationships with family and peers, and display more adaptive coping strategies and well-being than do insecurely attached adolescents (Kerns & Stevens, 1996). Therefore, successful adolescent development requires some element of separation from parents, while also maintaining a level of connectedness and the formation of secure peer relations. This may also be the case for boarders and so the present study seeks to examine whether levels of relationships with parents and peers are similar or different between day students and boarders and how these

relationships might change over time. Further, differences in well-being (operationalised as meaning and purpose and life satisfaction), emotional instability, and impeding motivation (operationalised as anxiety and uncertain control) may also shed light on the processes affecting interpersonal relations of day students and boarders.

2.11.6 Effects of teacher-student relationships on adolescent development.

A unique difference in the educational context of boarders is that they often spend greater amounts of time than day students with teachers and other adult caregivers at school, particularly after hours. For some, this may be through involvement in ECAs or academic tuition, which may also be the case for day students, but all boarders are under the direct care and supervision of boarding staff rather than their parents for a large proportion of the school year. A relationship with at least one caring adult, not necessarily a parent, is suggested to be the single most important protective factor for young people, and for many children this adult may be a teacher (Sabol & Pianta, 2012). This might particularly be the case for boarders who are distanced from the important influence and support of the home. A great deal of developmental and attachment research has largely focused on parent-child relationships as the primary caregivers. However, research has more recently broadened to include other adult-child relationships that occur at school as well. The secure teacher offers the child a relationship that is sensitive, responsive, emotionally supportive, and a secure base, which is qualitatively similar to that of the care provided by a secure parent (Kennedy & Kennedy, 2004).

Boarding staff, often trained in their roles as professional carers (Hawkes, 2010a, 2010b), also have the potential to perform this secure attachment function for

boarders (Anderson, 2005; Cookson & Persell, 1985). In her study of the emotional transition of 12-year old children to boarding school, Mason (1997) indicated that close staff-student relationships was an important factor that facilitated a successful transition. In secondary school, the teacher-student relationship is usually not exclusive, nor long-term, as children typically interact with multiple teachers each day (Verschueren & Koomen, 2012). In contrast, the boarding house represents a context for greater continuity in these relationships and therefore the positive benefits of teacher-student relationships are important in a study of the role of boarding school and the academic and non-academic outcomes of students residing there.

As noted earlier, outside of parent-child relationships within the family context, interpersonal relationships in school are increasingly considered key determinants that shape children's development (Pianta, Hamre, & Stuhlman, 2003). For many boarders who come from rural or remote areas of Australia, the transition to secondary school can be a significant one, as it can be for day students. Peer relations have been identified as being particularly pertinent in determining both day and boarding students' adaptation to high school (Cree, 2000; Downs, 2002; Whyte & Boylan, 2008). Despite the significance of teacher-student relations, studies considering the interrelatedness of the multitude of social relationships in children's academic and non-academic development, at home and in school, are still scarce (Verschueren, Doumen, & Buyse, 2012). The current study provides an opportunity to examine the role of the boarding context in students' relationships with parents, peers, and teachers, by juxtaposing these against the experiences of day students within the same schools and over the same period of time. Attachment theory would suggest that for adolescence there is likely to be little or no effect of boarding school on non-academic outcomes as it is a period in life when young people have typically

moved away from parents as the primary attachment and modern communications may facilitate similar relations with parents and peers for both day and boarding students.

2.12 Summary—Theories and Perspectives Informing the Present Investigation

The range of theories, perspectives, and empirical research discussed in this chapter highlight potentially relevant factors that might be considered in a study of students' attendance at boarding school and its effect on salient academic and non-academic outcomes (discussed in the next section). An ecological systems perspective informs this study by highlighting the importance of proximal processes and interactions of the individual-ecological context at various levels within the system. The extracurricular activities perspective highlights the potential for boarding to be an out-of-school time activity that absorbs students' time, attention, and energy while engaged with peers and supportive adults. Similarly, the Positive Youth Development viewpoint reinforces the importance of youth in such activities but also the reciprocal influence of the individual and the environment to enable positive development. Finally, an attachment perspective suggests that relationships with parents are important for successful development, but also important are relationships with peers and non-familial caregivers (e.g., teachers) for the socio-emotional and academic development of individuals as they transition through life stages. Importantly for this study given its exploratory nature, these perspectives and examples of empirical research suggest a range of covariates that need to be considered alongside student type (day/boarding student), as well as a broad range of academic and non-academic outcomes that should be considered to best assess the

role of attending boarding school (or not attending boarding school) in the development of youth.

Having traversed major theoretical perspectives relevant to the role of boarding school, the discussion to follow explores the range of academic and non-academic outcomes that represent a viable set of factors through which to examine the role of boarding school. Also discussed is the range of covariates that may be active in the boarding school context, as well as improvements to statistical modelling, to better assess the relative salience of student type (day/boarding student) over and above the influences of potentially confounding covariates not previously taken into consideration.

2.13 Factors Important to Assess in the Boarding Experience

2.13.1 Academic outcomes.

Academic outcomes derived from the conceptual and empirical review represent a broad range of salient outcomes assessed in the current study. These include motivation, engagement, academic buoyancy, approaches to learning, achievement, and achievement-related behaviours. This study seeks to investigate what role boarding school has in these outcomes and how these effects operate for different students (see importance of covariates as moderating factors discussed below). The role, relevance, and significance of these outcomes in the current research are now described.

2.13.1.1 Motivation.

From an educational point of view, student motivation can be seen to have a significant role in an individual student's achievement and his/her interest in, and enjoyment of, school (e.g., Schunk, Pintrich, & Meece, 2008). Much of the motivation research is guided by diffuse theoretical perspectives and as a result there

have been calls for more integrative approaches and "use-inspired basic research" (Pintrich, 2003, p. 668; see also Murphy & Alexander, 2000; Wigfield & Cambria, 2010). In the case of the current study, "motivation is defined as individuals' energy and drive to learn, work effectively, and achieve to their potential, and engagement as the behaviours aligned with this energy and drive" (Liem & Martin, 2012, p. 3; see also Martin, 2007, 2010a). There are various multidimensional approaches to motivation and engagement. The Motivation and Engagement Wheel (Martin, 2007, 2008) is one encompassing approach that seeks to account for the various motivation and engagement factors readily identifiable in school and home contexts (Martin, Anderson, Bobis, Way, & Vellar, 2012).

The Motivation and Engagement Wheel (Martin, 2007, 2008) consists of 11 first-order factors that map onto three higher-order factor sets: *adaptive motivation* (self-efficacy, valuing school, mastery orientation, planning, persistence, task management), *impeding motivation* (anxiety, uncertain control, failure avoidance), and *maladaptive motivation* (self-handicapping, disengagement) (see Green et al., 2012). Each of the 11 first-order factors are included in order to operationalise seminal motivation theorising related to attributions, control, valuing, goal orientation, need achievement, self-worth, self-efficacy, self-determination, and self-regulation (Martin, 2007, 2008).

Research is mixed as to the effects of boarding school on motivation. For example, TABS (2013) reported that boarders found the peer environment of boarding school to be academically motivating. Conversely, Cree (2000) suggested that boarders did not appear to have a positive attitude to school work and, due to the greater population of rural students at his research school, exhibited an anti-education/anti-intellectual culture, whereas the day students appeared to have much

greater academic motivation and engagement. Similarly, Tripathi and Shukla (2009) found that boarders exhibited poorer study habits in comparison to day students. Yet, it is also suggested that since boarders spend a greater amount of time at school, an environment that provides greater exposure to the academic support of teachers and peers, this environment may have a positive effect on their motivation, engagement, and achievement in comparison with day students (see Cookson, 2009; Goffman, 1968). Consequently, to better understand any differences or factors that might influence day students' or boarders' academic orientation, measures of motivation are represented in this study.

2.13.1.2 Academic engagement.

In addition to motivation, a range of noteworthy academic engagement factors are also included. Consistent with Green, Martin, and Marsh's (2007) study of academic development, additional factors include *class participation*, *enjoyment of school*, *educational aspirations*, *homework completion*, and *absenteeism*. As outlined above, it is contended that boarders and day students may differ in terms of their engagement and orientation to learning. It is suggested that as boarders spend a greater amount of time at boarding school, they are exposed for a greater period of time to particular values, attitudes, and beliefs, as well as to teachers and peers, than day students. In turn, boarders are more likely to internalise both the formal and informal curricula of the school which may affect academic and non-academic outcomes (see Cookson, 2009; Cree, 2000; Goffman, 1968). Learning environments that engender student participation are said to enhance students' commitment to learning (Richter & Tjosvold, 1980), whereas environments that lack participation tend to lead to unsuccessful educational outcomes (e.g., emotional withdrawal, poor school identification) (Finn, 1989). To assess participation in the academic context,

class participation is included as an additional measure of academic engagement (Martin & Marsh, 2008a). *Enjoyment of school* is another engagement measure included in this study (Green, Martin, Marsh, & McInerney, 2006). Enjoyment of school represents students' willingness to attend and reflects how students feel about their academic experience while at school (Elliot & Sheldon, 1997; Lee, Sheldon, & Turban, 2003). Students higher in engagement are also more likely to report more positive educational aspirations (e.g., future course enrolment intentions) (Meece, Wigfield, & Eccles, 1990). Therefore, *educational aspirations* (*viz*. positive academic intentions) is included as a factor to assess as it is relevant to boarding school (Martin et al., 2013). *Absenteeism* (or conversely, attendance) at school is another key issue relevant to the acquisition of basic academic skills and knowledge (Australian Council for Educational Research, n.d.). Similarly, *homework completion* plays a critical role in high school students' academic development and has been found to positively predict academic performance (Green et al., 2012) and achievement motivation (Bempechat, 2004; Cooper, Robinson, & Patall, 2006). Taken together, these five factors are included to "round out" the set of engagement factors employed as dependent variables in this study.

2.13.1.3 Academic buoyancy.

The school context is an environment that presents students with challenges, setbacks, and pressure on a daily basis, and this may be the case for the residential environment of boarding schools too (Martin & Marsh, 2008a). Nevertheless, the few studies that have examined boarders' coping and transition to boarding school have found no significant difference in their adaptation in comparison to day students (Bramston & Patrick, 2007; Downs, 2002; Whyte & Boylan, 2008). While boarders may often be concerned about meeting the academic challenges at boarding school,

there is little evidence to suggest this affects them negatively (Bramston & Patrick, 2007). Needless to say, however, even robust and motivated students require the capacity to cope with the various types of academic challenge and adversity that is ever present and associated with school life (Martin et al., 2013). *Academic buoyancy* is defined as "students' ability to deal effectively with academic setbacks, school-related stress, and school-related pressure in the course of everyday school life" (Martin et al., 2013, p. 277; see also Martin & Marsh, 2006, 2009). This can include, but is not limited to, poor performance, competing deadlines, exam pressure, or difficult tasks (Martin & Marsh, 2008a). Academic buoyancy is a relatively recent construct and the current study presents an ideal opportunity to further understand its effects in relation to a different context—the boarding school. Academic buoyancy has been shown to predict youth academic and non-academic outcomes (Martin, 2013; Martin & Marsh, 2006). It is therefore proposed that academic buoyancy is relevant in a study of students attending boarding school as the development of academic buoyancy has the potential to maintain and enhance academic and non-academic well-being (Martin & Marsh, 2008b).

2.13.1.4 Student approaches to learning.

Education systems aim to enable students to acquire more than just knowledge; they also strive to help students become capable, confident, and enthusiastic learners. Schooling represents a period for students to gain the necessary knowledge and skills and to develop approaches to continuing learning that will allow them to successfully adapt to the changing circumstances they will encounter over their lifespan (Marsh, Hau, Artelt, Baumert, & Peschar, 2006). As outlined earlier, Cookson (2009), Cree (2000), and Goffman (1968) contend that boarders and day students differ significantly in their orientation to learning due to greater time at

school and greater exposure to influential others (e.g., peers and staff). The current study provides an opportunity to test this contention. Those students who possess positive approaches to learning—both in terms of attitudes and behaviours—are likely to experience positive learning outcomes. After school, those individuals who have developed the ability to motivate and learn for themselves are well-situated to become lifelong learners. Therefore, a study of the outcomes of boarding school would do well to assess students' approaches to learning (Artelt, Baumert, Julius-McElvany, & Peschar, 2003; see also Marsh et al., 2006). For these reasons, a number of measures of student approaches to learning (SAL)—competitive learning, cooperative learning, and personal best goals (PB goals)—are deemed salient to gaining a better understanding of the role of boarding school.

Increasingly in the future, the acquisition of knowledge will require people to work together in groups as well as the ability to learn and complete tasks independently. A recent Programme for International Student Assessment (PISA) study (Artelt et al., 2003) finds that student preferences for *cooperative* or *competitive learning styles* were not mutually exclusive and nor was one preference superior over the other. Importantly, an understanding of an individual's preference for a cooperative or competitive learning style provides an indication of their approach to working with others later in life (Artelt et al., 2003; see also Marsh et al., 2006). Research by TABS (2003) indicated that boarders prefer working cooperatively while day students do not prefer a cooperative learning style to the same extent. If there are differences between day students and boarders in their views of learning, as is suggested by Cookson (2009), Cree (2000), and Goffman (1968), is this borne out in different approaches to learning? Due to the communal living and peer assistance on offer in the boarding house, do boarders report higher levels of

cooperative approaches to learning? Or, does the intensity of time spent in the boarding house generate a more competitive approach to learning in boarders? The present study provides an opportunity to measure any differences that may arise in day students' or boarders' competitive or cooperative approaches to learning over the course of a year.

Included also in these measures of SAL is a relatively new construct representing personal best (PB) goals. The concept of PB goals stems from emerging interest in value-added models and modelling of academic trajectories, representing growth approaches to student development (Martin, 2012). Martin (2012) defined PB goals as "specific, challenging, competitively self-referenced targets towards which students strive" (p. 91). As such, in the academic context, they are seen to represent an individual's goals or standards of excellence that match or exceed their previous best efforts (Martin & Liem, 2010). Research has found them to be significantly associated with adaptive academic outcomes and therefore salient in a student's repertoire of approaches to learning (Martin & Liem, 2010). Consequently, PB goals can be seen to play a significant role in the academic development of students, over and above prior achievement. As was discussed previously, it is contended that boarders are more likely to internalise both the formal and informal curricula of the school (e.g., Cookson, 2009; Cree, 2000; Goffman, 1968). What does this mean in terms of their ability to improve on past performance and goal setting? Does the boarding environment promote an atmosphere (i.e., a potentially collective academic environment after school hours) where boarders are more likely to set goals than day students (a potentially more individualist academic environment in comparison)?

Taken together, these dimensions represent important academic outcomes that might be indicated by student type (day/boarding status) (see Figure 2.2). This

figure represents the first hypothesised model to be assembled, with subsequent stages of this model adding non-academic outcomes as well as the contribution of covariates (see below).

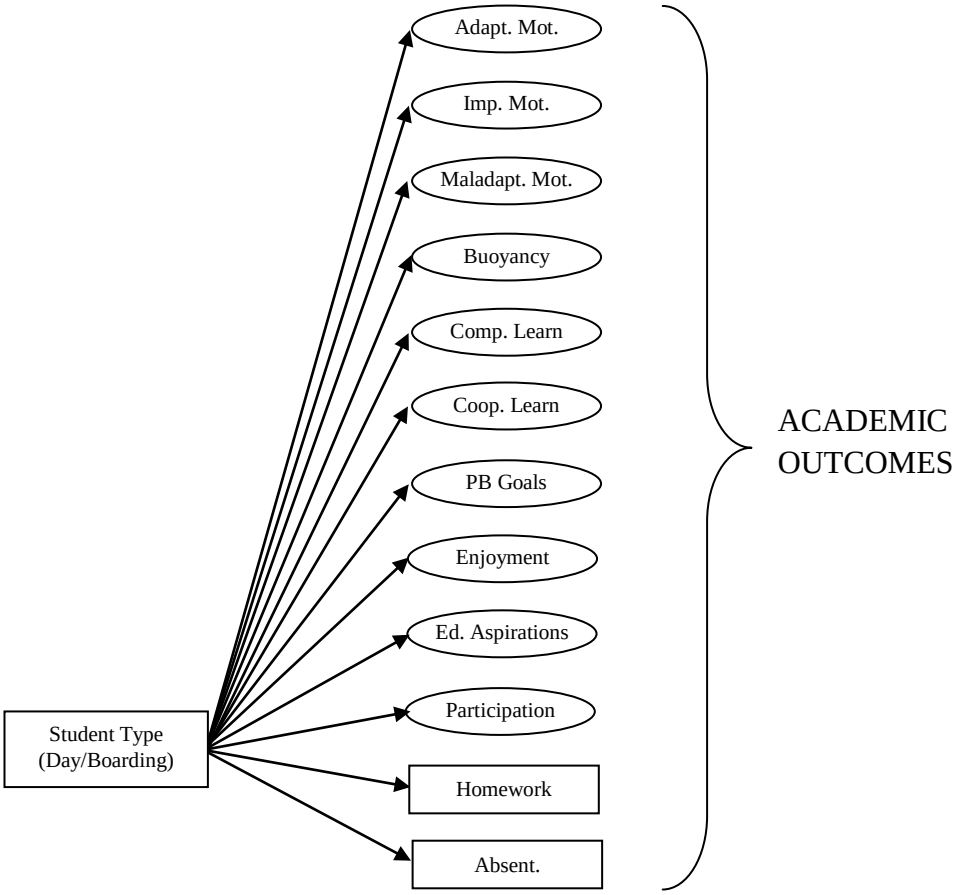

Figure 2.2. Hypothesised process model of academic outcomes that may be predicted by student type (day/boarding status).

Adapt. Mot. = adaptive motivation, Imp. Mot. = impeding motivation, Maladapt. Mot. = maladaptive motivation, Comp. Learn. = competitive learning, Coop. Learn. = cooperative learning, Enjoyment = enjoyment of school, Ed Aspirations = educational aspirations, Participation = participation in class, Absent. = absenteeism.
N.B.: single-item variables are depicted by a rectangle, whereas latent variables from multiple items are depicted by an ellipse.

2.13.2 Non-academic outcomes.

Based on the review of relevant theories, it is proposed that measures of students' relationships with parents, peers, and teachers, along with measures of well-being and ECA participation are also important to a study of the role of boarding school. The result of individual-contextual interactions provides individuals with an array of personal resources (e.g., relationships), level of well-being, and

opportunities for further participation in activities which in turn promote a range of non-academic outcomes. It may be that some of these non-academic outcomes are relatively stable across adolescence (e.g., Morin, Maïano, Marsh, Nagengast, & Janosz, 2013). Given that boarders and day students are under the influence of different amounts of caregiver relationships, separated from home for long periods of time, it is prudent to assess whether the boarding experience has a positive or negative effect on relationships and psychological and social well-being. Appropriate non-academic outcomes that should be included in a study of the role of boarding school are now outlined.

2.13.2.1 Well-being.

Increasingly, schools are having to respond to the challenges of young people's mental health (e.g., anxiety, depression, anti-social behaviour) (Sawyer et al., 2000). This entails integrating social and emotional well-being into the fabric of what is taught via the formal and informal curriculum (Bernard, Stephanou, & Urbach, 2007). As such, well-being is an important consideration for youth living away from home as:

> Social and emotional well-being encompasses a constellation of positive environmental influences that interact with positive social and emotional characteristics of young people. The result of the interaction of contextual and individual factors results in different outcomes such as positive relationships, well-being and achieving to one's potential. (Bernard et al., 2007, p. 11)

The study of subjective well-being (SWB) concerns what might more commonly be termed "happiness" or "satisfaction" and considers how people evaluate their immediate and ongoing life circumstances and across types of

situations (Diener, 2000, 2012). SWB is one measure of the quality of life of an individual and of societies (Diener, 2013; Diener, Oishi, & Lucas, 2003). High SWB has been found to benefit individuals and societies in a range of ways including citizenship, social relationships, health, and longevity (Diener, 2012, 2013). SWB has been found to be fairly stable over time, often strongly correlated with stable personality traits, and thus for many people provides the capacity to rebound after major life events (Diener et al., 2003). Previous studies of homesickness, emotional stability, coping, and transition to boarding school have found no significant difference between boarders and day students (see Bramston & Patrick, 2007; Downs, 2002; Whyte & Boylan, 2008). Ronen and Seeman (2007) also found that even under extreme stress, adolescents were able to maintain their SWB due to a range of personal resources (e.g., social support and self-control skills). In the current study, well-being is operationalised via measures of life satisfaction, meaning and purpose in life, and emotional stability.

Previous studies of *life satisfaction* have tended to focus on adults, with the life satisfaction of children and adolescents only receiving relatively recent attention (Proctor, Linley, & Maltby, 2009). The existing body of literature identifies the importance of school to young people's life satisfaction, consistent with Bronfenbrenner's (1979) ecological systems theory, whereby the school environment and the interactions with important adults therein affect students' perceived quality of life (Suldo, Riley, & Shaffer, 2006). Thus, the current study represents an opportunity to extend important research in this area by examining life satisfaction among youth in a unique school environment (i.e., boarding school).

Research on the life satisfaction of young people reveals that it is influenced by personality, environmental, and activity variables. Both personal and ecological

assets—such as school connectedness and positive relationships with peers and parents—have been found to significantly and positively predict the life satisfaction of early adolescents (Oberle, Schonert-Reichl, & Zumbo, 2011). While going away to boarding school may represent an initial dislocation from these assets, it may also represent an important social context for some students that puts them in greater contact with more supportive assets such as teachers and other prosocial adults and peers.

A sense of *meaning and purpose* is suggested to represent a significant and universal human motive (Frankl, 1978). Meaning may benefit the individual by contributing to the development of their sense of identity, their ability to adapt to the changes and challenges of life, and their ongoing maintenance of health-enhancing behaviours (Savolaine & Granello, 2002). As was noted earlier, it is reported that extensive and long-term negative developmental outcomes, in terms of identity and meaning, have resulted for some students after having attended boarding school (e.g., Duffell, 2000; Elias et al., 2012; McBeth, 1982; Neegan, 2005; Partridge, 2012; Pember, 2007; Schaverien, 2004; Smith, 2010; Standish, 2011). Over the course of life, adolescence is suggested as being a significant stage of development when individuals begin the task of searching for and establishing purpose in life (Erikson, 1968). Martin, Nejad, Colmar, and Liem (2012) have added to this contention, suggesting that inadequate completion of this task results in "role confusion and a sense of uncertainty of one's future" (p. 64). Braskamp, Trautvetter, and Ward (2008) conceptualise purpose as "an approach to thinking broadly about one's life in ways that encompass vocational plans and aspirations as well as personal interests and interpersonal and family commitments" (p. 27). As individuals navigate their way through life, constructively adjusting cognition and behaviour, they gain a sense

of control in their lives, which results in foundations of enhanced meaning and purpose in life (Wrosch & Scheier, 2003). In this way, meaning and purpose refers to an individual's perception of whether they are living a worthwhile, goal-directed, and meaningful life (Petersen & Roy, 1985). Thus, these concepts are viewed in the current study as representing an individual's personal sense of meaning and how this engenders a sense of purpose (Reker, Peacock, & Wong, 1987).

The final construct used to assess the social and emotional well-being of students attending boarding school is *emotional stability*. Poor mental health outcomes and psychological distress can result from an individual's failure to adopt alternative approaches to unattainable goals and maladaptive self-regulation (Wrosch & Scheier, 2003; Wrosch, Scheier, Miller, Schulz, & Carver, 2003)—in other words, adapt. As noted earlier, adolescence is a period in life marked by poor mental health for many young people (Begg et al., 2007). Considering that students living away from home at boarding school are away from many of their natural support structures, effects on mental health is an important consideration. The present study explores the issue of poor mental health via an *emotional instability* construct (see Marsh, 2007; Martin, Nejad, Colmar, & Liem, 2013). Emotional instability is envisaged to represent an individual's moodiness, anxiety, and emotional uncertainty (see Marsh, 2007). As discussed previously, a common public perception is that boarding schools may cause long-term psychological harm (e.g., Duffell, 2000; Smith, 2010). It is important to note, however, that previous research by Downs (2002) that used the same measure of emotional instability as the current study found no significant difference between day students and boarders over a one-year period. Including measures of well-being (such as emotional instability) provides the opportunity to assess whether contemporary boarding has a negative effect on

boarders, juxtaposed against levels of well-being of same-age day students at the same schools.

2.13.2.2 Interpersonal relationships.

Relationships with peers, parents, and teachers play a significant role in the ongoing social and psychological well-being as well as the educational development of young people. A great deal of research reveals the significance of positive interpersonal relationships for healthy human functioning such that relationships can provide happiness, which buffers against stress (Argyle, 1999; Glover, Burns, Butler, & Patten, 1998; McCarthy, Pretty & Catano, 1990), provide emotional support and companionship in people's daily lives (Argyle & Furnham, 1983; Gutman, Sameroff, & Eccles, 2002; Irwin, 1996), and act as important sources of social and emotional development (e.g., McCarthy et al., 1990), particularly during childhood and adolescence (Damon, 1983; Hartup, 1982). Conversely, unhappiness and distress can result from the loss of relationships (Bronfenbrenner, 1974).

Research has consistently identified the substantial role that interpersonal relationships play in students' outcomes and experiences at school. For example, they are critical factors in young people's engagement and motivation at school (Ainley, 1995; Battistich & Hom, 1997; Hargreaves, Earl, & Ryan, 1996; Pianta, 1998). Indeed, relationships with parents, teachers, and peers have been identified as a coping mechanism for students at boarding school (see Bramston & Patrick, 2007). *Peer relationships* appear to positively influence general self-esteem and academic performance (Liem & Martin, 2011). Evidence also suggests that peer relationships are a significant source of social and emotional support, beyond that of the parents (e.g., Gorrese & Ruggieri, 2012; Laible, 2007; Laible et al., 2000; Wilkinson, 2010). Callow (1994) noted that relationships with peers are a major influence on the

development of individuals at boarding school by the very nature of being thrust together with others in a similar situation. Adding to this is research that suggests that relationships with peers also provide a supportive framework, aiding students' transition to and coping with boarding school life (Bramston & Patrick, 2007; Downs, 2002). Therefore, among other salient non-academic outcomes, relationships with peers and how these change over the year, for day students and boarders, is an important measure in the current study.

Parent-child relations are also found to play a key role in children's academic motivation and performance at school (e.g., Bempechat & Shernoff, 2012; Furrer & Skinner, 2003; Lynch & Cicchetti, 1997; Turley, Desmond, & Bruch, 2010). For example, positive parent-child relationships are associated with higher self-esteem, better academic functioning in class, and greater engagement at school (e.g., Ryan, Stiller, & Lynch, 1994). As has been outlined in the earlier review of conceptual and empirical perspectives, the potential effect of boarding on relationships with parents is a central issue to be addressed. A significant body of literature has described the negative effect of boarding on the relationship of some boarders with their parents (e.g., Duffell, 2000; Elias et al., 2012; McBeth, 1982; Smith, 2010; Wild & Anderson, 2007). However, it would appear that the modern boarding context encourages greater access and provides greater opportunity for children to maintain relationships with their parents through digital technology and less restrictive leave arrangements than may have been the case in the past (see Cree, 2000; Wheare, 2006; White, 2004a). Bramston and Patrick (2007) found that supportive relationships with parents greatly benefitted boarders' transition to urban boarding schools. Similarly, Whyte and Boylan (2008) also found that day students and boarders did not differ significantly in their ratings of relationships with parents

and that boarders were able to maintain positive relationships with parents (see also Cree, 2000). The current research provides an opportunity to further assess the effect of the current boarding system on students' relationships with parents and whether the pattern of relationships with parents differs for day students and boarders.

As discussed previously, evidence supports the importance of positive *teacher-student relationships* and students' subsequent development in school (e.g., Birch & Ladd, 1998; Furrer & Skinner, 2003; Hamre & Pianta, 2006; Wentzel, 2002). Importantly, after controlling for gender, age, and the presence of both parent and teacher relationships in the one model, Martin, Marsh, McInerney, Green, and Dowson (2007) found that, although teachers and parents are clearly influential, teacher effects are stronger than parent effects, particularly in the academic domain. Petzold (1990) suggested that relationships with teachers are particularly important for boarders; however, boarders in Cree's (2000) study identified relationships with parents as being more significant than relationships with teachers or peers. Boarders typically spend a greater amount of time with teachers, coaches, and boarding staff, so boarding potentially offers greater opportunity for them to develop relationships with teachers (TABS, 2013). The present study provides an opportunity to further measure the effect of boarding on teacher-student relationships.

2.13.2.3 Extracurricular activities.

Opportunities for involvement in *extracurricular activities (ECAs)* differ between students, partly based on the extent to which schools can provide a variety of activities (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006). For some students—such as those from rural or regional areas—attending boarding school may provide greater access to ECAs. Research on ECA participation has shown positive links to academic achievement, school engagement, and educational aspirations (e.g.,

Eccles & Barber, 1999; Farb & Matjasko, 2012; Holland & Andre, 1987). ECAs have also been found to be a protective factor for retention (e.g., Mahoney & Cairns, 1997; McNeal, 1995). Of particular relevance to the current study, school-based ECAs have been found to be more beneficial than out-of-school time activities (Marsh & Kleitman, 2002). Marsh and Kleitman (2002) found that school-based ECAs benefitted socio-economically disadvantaged students as much as, or even more than, advantaged students by fostering school identification/commitment, which in turn was believed to improve a diverse array of academic outcomes. Parents of boarders rate highly the opportunity for their children to participate in ECAs (Lawrence, 2005). This appears to be the case, with boarding school purported to provide greater access to a range of ECAs (see Cree, 2000; Fraser, 1968; White, 2004a). Whether attending boarding school does indeed afford greater participation in ECAs, especially for disadvantaged youth (e.g., low-SES, ethnic minority, Indigenous youth), is assessed via the current study.

These non-academic outcomes are now added to the hypothesised process model alongside academic outcomes (see Figure 2.3). This figure represents the second set of components to be predicted by student type (day/boarding status).

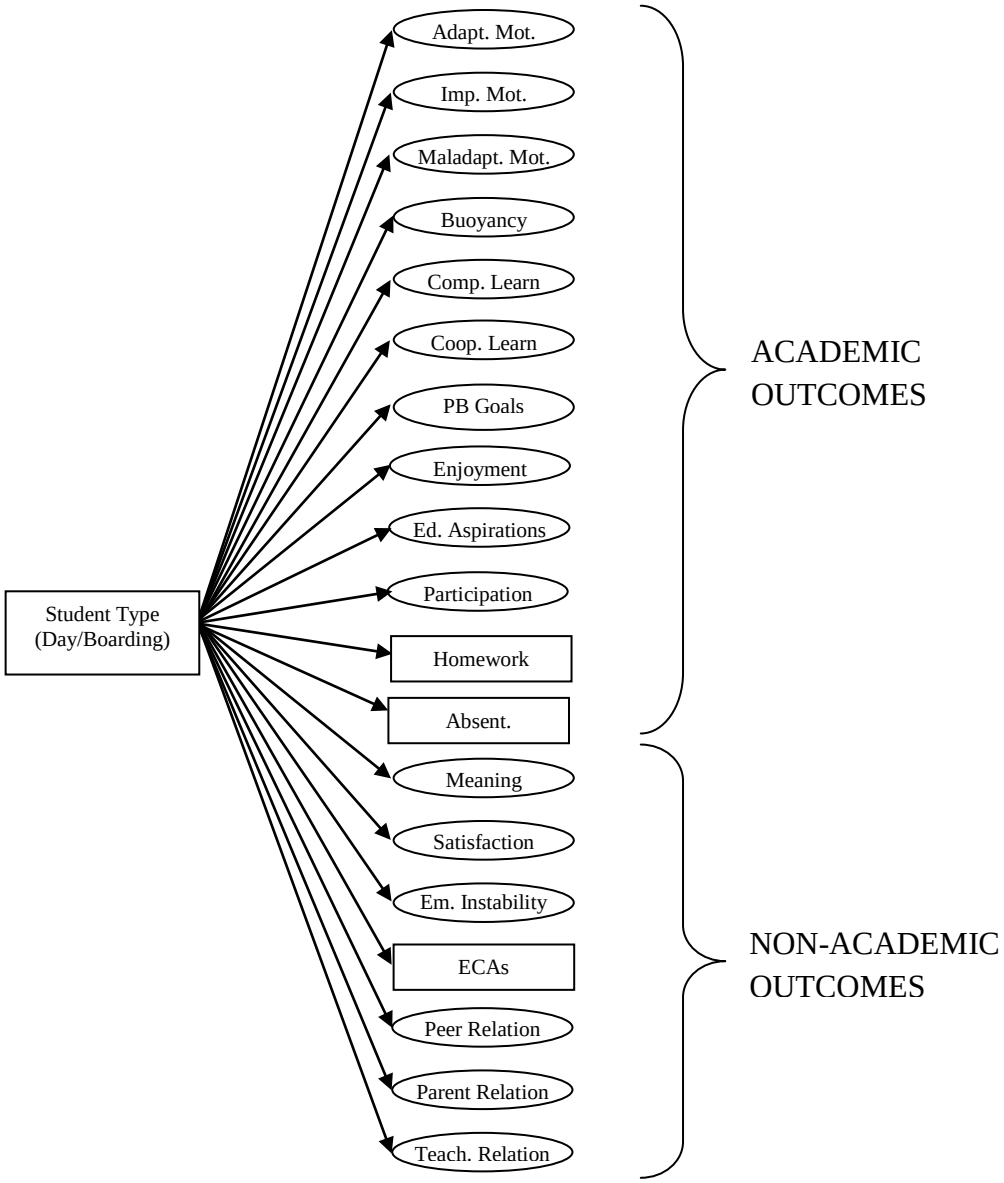

Figure 2.3. Hypothesised process model including both academic and non-academic outcomes predicted by student type (day/boarding status).

Adapt. Mot. = adaptive motivation, Imp. Mot. = impeding motivation, Maladapt. Mot. = maladaptive motivation, Comp. Learn. = competitive learning, Coop. Learn. = cooperative learning, Enjoyment = enjoyment of school, Ed Aspirations = educational aspirations, Participation = participation in class, Absent. = absenteeism, Meaning = meaning and purpose, Satisfaction = life satisfaction, Em. Instability = emotional instability, ECAs = extracurricular activities, Teach. Relation = teacher relations.
N.B.: single-item variables are depicted by a rectangle, whereas latent variables from multiple items are depicted by an ellipse.

2.14 Explanatory Factors Important to Disentangle When Assessing the Boarding Experience—the Role of Covariates

Thus far, the discussion has focused on the range of outcomes, factors, and theoretical perspectives relevant to the boarding experience, which may help to explain any differences in the school experience of day and boarding students. However, these alone do not take into account the variety of factors that may significantly affect the boarding experience, nor do these account for individual differences between students (e.g., Fauth, Roth, & Brooks-Gunn, 2007; Fredricks & Eccles, 2005; Larson, Hansen, & Moneta, 2006; Lleras, 2008; Rose-Krasnor, Busseri, Willoughby, & Chalmers, 2006; Shernoff & Vandell, 2007). Accordingly, the present investigation also encompasses background factors in the form of socio-demographics and prior achievement as well as individual differences in the form of personality.

2.14.1 Socio-demographic factors.

The contexts in which individuals live, learn, and play provide resources that influence cognitive, behavioural, and emotional developmental outcomes (Benson, Scales, & Syvertsen, 2011; Werner, 1993). There are background and personal characteristics that affect academic and non-academic outcomes. For example, students of particular ethnicity may also live in low socio-economic families (OECD, 2003); others may be affected as a result of educational disadvantage due to their Indigenous cultural background or levels of parents'/guardians' education (FaHCSIA, 2009; Martin et al., 2013; Productivity Commission, 2011). As outlined earlier, adolescence represents a time of plasticity and reciprocal individual-ecological relations (Bronfenbrenner, 1994; R. Lerner & Lerner, 2012), and thus there is a significant conceptual basis for including relevant background factors such

as socio-demographic factors (and others outlined below) in research on cognitive, emotional, and behavioural development and regulation. In the current investigation, these socio-demographic factors take the form of gender, age, language background, and Indigenous cultural background.

2.14.1.1 Gender.

A key socio-demographic issue in education pertains to the effects of *gender* on academic and non-academic outcomes. In terms of academic outcomes, recent research has suggested that, on average, girls are more positive in their patterns of motivation and engagement such that they score significantly higher on adaptive dimensions and lower than boys on impeding and maladaptive dimensions (e.g., Marsh, Martin, & Cheng, 2008; Martin, 2003, 2007). Research has also indicated that boys' and girls' approaches to learning tend to be different (Artelt et al., 2003). For example, Marsh et al. (2006) found modest, yet systematic patterns of gender differences consistent with gender stereotypes (e.g., girls preferring cooperative learning situations, whereas boys preferring competitive learning situations). In terms of academic buoyancy, mean-level gender effects have shown boys scoring higher on academic buoyancy than girls (Martin & Marsh, 2008b). Findings have also shown that gender contributes moderately to students' life satisfaction (e.g., Lipschitz-Elhawi, Itzhaky, & Michal, 2008; Proctor et al., 2009). While mean-level differences may exist between girls and boys on academic and non-academic outcomes, it is important to note that these differences are usually not reflected in the factor structure and psychometric properties of these measures (e.g., Liem & Martin, 2012; Marsh et al., 2006; Martin, 2007). Such findings of mean-level differences have prompted calls for research to more closely investigate the effects of gender on school outcomes.

The limited research available suggests that there are differences in the academic and non-academic development of boarders according to their gender. For example, males cite increased opportunities and girls cite new routines and friends as reasons for wanting to attend boarding school (Bramston & Patrick, 2007). Downs' (2002) longitudinal study of students attending boarding school found differences in levels of homesickness and significant negative correlations with various aspects of self-concept based on gender. Given that gender appears to be systematically related to a number of academic and non-academic outcomes measured in this study and may vary as a function of day/boarding status, it is important to include this factor to uniquely understand the role of boarding school.

2.14.1.2 Age.

Development in adolescence is influenced by a range of contextual processes that change due to the *age* of the individual, family circumstances, and the environment in which they live (Allen, 2008; Moretti & Peled, 2004). For example, Martin (2007) showed that after the beginning of secondary school there is a general decline in student motivation and engagement. Recent research into engagement and performance measures (e.g., academic buoyancy, enjoyment of school, class participation, educational aspirations) indicates that, on average, older students are higher in disengagement and lower in homework completion (Martin, 2007; see also Martin, 2009a). Mean-level age effects have also been found for older students reporting lower academic buoyancy than younger students (e.g., Martin & Marsh, 2006, 2008a). Empirical research into the effects of age on ECA participation has generally shown that the breadth of activities in which individuals participate decreases as age increases, often in favour of narrower but more intense or greater time participating in fewer activities (Côté, 1999; Fredricks & Eccles, 2006b). As

these findings illustrate, across a range of academic and non-academic dimensions, age is a potentially confounding variable that ought to be included in modelling to better understand the unique influence of boarding school.

2.14.1.3 Language background.

The way a person thinks, feels, and behaves is in part influenced by his/her ethnicity or language background (OECD, 2006; Martin, Nejad et al., 2012; Portes & MacLeod, 1996). Indeed, it is not uncommon for *non-English speaking background* (NESB) students to underachieve and disengage from school due to their particular background influences (OECD, 2006; Sirin, 2005), and it is therefore important that this be distinguished from the effects of boarding school. Inclusion of *language background* as a covariate also provides an opportunity to test the cross-cultural generalisability of findings and to test the external validity and generalisability of proposed measures, theories, and models (Marsh et al., 2006). Extant research suggests a mixed profile of academic and non-academic outcomes for NESB students. This includes variance in academic performance across ethnic groups and the role that educational values of immigrant parents play in their children's achievement (Duran & Weffer, 1992; Glick & Hohmann-Marriott, 2007; Martin et al., 2012). Portes and MacLeod (1996) found that ethnicity played a significant role in students' academic performance, even after accounting for significant variance explained by parents' SES, length of residency, and time spent on homework.

As relevant to the current study, language background has been linked to motivation and engagement (Wigfield et al., 2006). For example, mean-level differences have suggested that Asian-American children perform better than many European-American children, and these two groups continue to outperform African-American children and Latino/a- and Mexican-American children. Research has also

confirmed the role of ethnicity in the development of self-esteem, self-efficacy, and personality (Wang, Haertel, & Walberg, 1993). Differences have also been detected in regards to approaches to learning between immigrant and native-born students, with immigrant students in Australia presenting with stronger learner characteristics across a range of measures assessed in PISA (Artelt et al., 2003). Recent research into the effects of race/ethnicity on participation in ECAs is mixed but has suggested the need to take NESB into consideration due to its strong correlation with other background variables (e.g., Coatsworth et al., 2005; Covay & Carbonaro, 2010; Kort-Butler & Hagewen, 2011). In summary, there is a role for language background in studies of academic and non-academic development (OECD, 2006). Hence, including a measure of language background as a covariate in modelling allows for the net contribution of boarding school on academic and non-academic outcomes to be better understood.

2.14.1.4 Indigenous cultural background (Aboriginality).

Extending the present consideration of cultural background, Indigenous children in rural and remote areas of Australia appear to be at a particular disadvantage with regard to academic and non-academic dimensions (McInerney, 2000). As noted previously, when compared on a range of salient school outcome measures, results have highlighted a significant gap in the educational outcomes of remote Indigenous students compared with students in all other locations as well as between Indigenous and non-Indigenous youth from the same geographic locations (ABS, 2012; MCEECDYA, 2008). In Australia, Indigenous students are less likely to attend school, have higher rates of daily absenteeism, and significantly lower retention rates than their non-Indigenous counterparts (ABS, 2012; Wild & Anderson, 2007). Indigenous youth are also less likely to attend tertiary education

(Bradley et al., 2008). Indigenous students differ on many other measures of schooling compared to their non-Indigenous peers—for example, being lower in achievement (McInerney, 2000), engagement, approaches to learning, and relationships with teachers (Martin, 2006a). As mentioned previously, improving access to education for Indigenous children living in remote areas via attendance at boarding schools has been a key recommendation of recent government reports (FaHCSIA, 2009; Productivity Commission, 2011). Indigenous cultural background is therefore relevant to this study in terms of its association with dependent variables and its unique association with boarding in Australia. This study, therefore, includes *Indigenous cultural background* (*Aboriginality*) alongside other socio-demographic variables.

2.14.1.5 Parents'/guardians' level of education.

There is substantial research from across a range of disciplines (e.g., sociology, economics, and psychology) documenting the importance of family factors such as the level of parents'/guardians' education in shaping children's academic outcomes (e.g., Alexander & Entwisle, 1988; Sullivan, Ketende, & Joshi, 2013; Teachman, Paasch, & Carver, 1997; Thompson, Alexander, & Entwisle, 1988; Yeung, Linver, & Brooks-Gunn, 2002). Higher levels of parents'/guardians' education have been found to be associated with higher levels of parental involvement with their child's education, such as attending parent-teacher and other school events, demonstrating enjoyment of the child's school, interacting with school personnel, and providing intellectual resources and helping with schoolwork (Bempechat & Shernoff, 2012). A meta-analysis by Haring, Stock, and Okun (1984) reported SES (including a measure of educational attainment) to be positively correlated with SWB (r = .13 to 27). As mentioned previously, youth from more

advantaged backgrounds are more likely to have access to a greater range of ECAs than students from disadvantaged backgrounds, consistent with social inequality gap reduction and identification/commitment models discussed previously (see Marsh & Kleitman, 2002). In particular, parental education appears to be related to organised youth participation, with youth whose parents have higher levels of education more likely to participate in ECAs (see Anderson-Butcher, Newsome, & Ferrari, 2003; Eccles & Barber, 1999). Overall, these examples illustrate that academic and non-academic outcomes may vary as a function of parents'/guardians' level of education.

2.14.2 Prior achievement.

Prior achievement is a key predictor of subsequent achievement and achievement-related behaviours (Hattie, 2009). More recently, motivation research has found that adaptive dimensions (e.g., enhanced task management, planning, persistence) are associated with higher academic achievement (Martin, 2007). Similarly, Bandura (2001) argued that self-efficacy was also linked to academic achievement. In terms of well-being, emotional stability has also been found to be positively related to academic achievement (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Adding to this, Quinn and Duckworth (2007) indicated that the relationship between well-being and academic performance may be reciprocally causal. Statistical modelling that examines the reciprocal or causal ordering of effects between achievement and motivation suggests that prior achievement influences subsequent motivation factors (e.g., academic self-concept) just as motivation factors influence subsequent achievement (Marsh, 2007; Valentine, DuBois, & Cooper, 2004). While the causal ordering of academic achievement and other motivation and engagement related factors warrants further longitudinal investigation, there is sufficient evidence to indicate that prior academic achievement should be included in

a study of academic and non-academic outcomes of school environments (Martin, Nejad et al., 2012), including the boarding school environment. This study presents such an opportunity. It may be the case that parents may make decisions about whether to send their child to boarding school based on prior achievement or factors relating to a child's temperament and their perceived capacity to "cope" in boarding school (e.g., personality). Given the diverse profile (including achievement profile) of students attending boarding school, it is important that effects due to student achievement are controlled to better assess the variance in academic and non-academic outcomes due to student type (day/boarding status).

2.14.3 Personality.

In order to further distinguish the educational effect of a range of psychological and socio-demographic factors, it is considered appropriate to control for variance attributable to individual differences—and in particular, personality factors (de Raad & Schouwenburg, 1996). Personality traits are relevant and significant factors in the positive development of individuals (Busato, Prins, Elshout, & Hamaker, 1999; Dunning, 1995; Jorm, 1989; Little, 1996, 2008). Accordingly, students may differ in their response to boarding school because of relatively stable personality traits; for instance, more extroverted students may cope better with boarding than more introverted students. Some boarders may already be conscientious and therefore any gains may be better attributed to this trait rather than the boarding experience. It may be that those students already open to experience are attracted to and comfortable in new environments such as boarding school. Further, it may be that some students are naturally agreeable and therefore better suited to accommodating the needs of others or following the rules and routines of such institutions. Similarly, personality traits may be the basis upon which some parents

decide to send their child to boarding school. To avoid systematic confounding of findings due to such individual difference factors, personality is included as another of the covariates.

A recently developed set of scales based on the Big-Five model of personality, the *International English Big-Five Mini-Markers* (IEBM) (Thompson, 2008), is used in the current study to investigate the role of personality as a covariate. The Big-Five model is probably the most frequently utilised framework to assess personality. Consistent with McCrae and Costa (1985, 2008), the five factors include agreeableness, conscientiousness, extraversion, neuroticism, and openness (see also DeNeve & Cooper, 1998; de Raad & Schouwenburg, 1996). McCrae and John (1992) described how the effects of personality can give rise to a range of regulatory processes—one of which is an individual's adaptation to his/her environment. They also described how the five factors have the potential to explain attitudinal and motivational styles, achievement-orientation, and the evolution of interpersonal relationships. They highlighted how the five-factor model can be most profitably used in applied settings, for example, education.

A recent longitudinal study by Martin et al. (2013) found that conscientiousness and agreeableness positively predicted adaptability while neuroticism negatively predicted adaptability, over and above variance which could be explained by socio-demographics and prior achievement. Research by Komarraju and Karau (2005) suggested that extraversion and openness explained some of the variance in student engagement while extraversion, neuroticism, and conscientiousness and openness (both inversely) explained some of the variance in students' avoidance of school. Poropat (2009) also indicated significant correlations between academic performance and key personality traits (i.e., agreeableness,

conscientiousness, openness). Structural equation modelling (SEM) has demonstrated that conscientiousness, extraversion, and openness predicted motivation to learn (Major, Turner, & Fletcher, 2006; see also Judge & Ilie, 2002; Komarraju, Karau, & Schmeck, 2009). Moreover, four personality traits—conscientiousness, openness, neuroticism, and agreeableness—have been found to explain up to 14% of the variance in academic achievement. Of these, conscientiousness emerged as a partial mediator of the relationship between intrinsic motivation and achievement (Komarraju et al., 2009).

SWB research has typically focused on biosocial indicators—for example, gender and age—to explain differences in well-being. While these predictors may show strong relations with SWB they are often limited in the amount of variance they can explain (e.g., Diener, 1984; Steel, Schmidt, & Shultz, 2008). This has prompted the recommendation that personality also be included as it is suggested as one of the strongest determinants of SWB (e.g., DeNeve & Cooper, 1998; Diener, 1984; Diener et al., 2003; McCrae & John, 1992). For example, personality dispositions such as extraversion and neuroticism (along with self-esteem) have a substantial effect on levels of SWB (Diener et al., 2003), but so too do a number of other personality traits. These include correlations between extraversion and positive affect (r = .20) (Costa & McCrae, 1980; see also Lucas & Fujita, 2000), neuroticism and negative affect (r = .38) (Costa & McCrae, 1980; see also Fujita, 1991), as well as smaller, though still significant, correlations of agreeableness and conscientiousness with measures of SWB (approximately r = .20) (DeNeve & Cooper, 1998). Results also clearly demonstrated a relationship between personality and life satisfaction (Rammstedt, 2007). Based on these findings showing the

relationship between personality and a diverse range of academic and non-academic outcomes, personality is deemed an important covariate to consider here.

2.14.4 School-level factors.

One of the central findings of the *Knowledge and Skills for Life* report (OECD, 2001) was the effect of school-level factors on student outcomes. In the present study, *single-sex/co-educational* schooling and *school-average achievement* are modelled with other covariates to better assess the unique contribution of attending boarding school in students' academic and non-academic outcomes.

2.14.4.1 School structure.

Approximately 45% of boarding schools in Australia are co-educational, with a further 32% being single-sex male and 23% single-sex female (ABSA, personal communication, 25 March, 2013). Contention has been raised as to whether school structure potentially facilitates development of particular gender identities (e.g., hegemonic masculinity, emphasised femininity) (see Connell & Messerschmidt, 2005; Poynting & Donaldson, 2005). Early research into the effects of school structure suggested that students attending single-sex schools, especially female students, scored more favourably on academic achievement, academic attitudes and behaviours, and educational aspirations (Lee & Bryk, 1986). A recent systematic review by Mael, Alonso, Gibson, Rogers, and Smith (2005) reported that students attending single-sex schools scored more favourably on achievement, although on other outcomes (e.g., self-concept, locus of control) there were mixed or non-significant findings of the effects of school structure. They also found that girls in single-sex schools reported more favourably on academic engagement and educational aspirations; supporting to some extent these earlier findings.

More recently, Hattie (2009) concluded that there is little research evidence to support claims that differences in the structures of schools—that is, single-sex education or co-education—make much difference to student outcomes when considered in isolation. It is contended that findings that favour single-sex or co-education are often confounded by differences in children's academic, behavioural, social, and family functioning that exist prior to attending these schools (Woodward, Fergussun, & Horwood ,1999). For example, when students' prior achievement has been controlled for, apparent advantages of single-sex or co-education can emerge, but any explained variance is typically small or inconsistent (Smithers & Robinson, 2006). A number of other variables have also been shown to possibly moderate the effects of single-sex schooling such as SES and ethnicity (Yu & Rodriguez-Hejazi, 2013). Generally, the available research has indicated mixed effects of school structure on a variety of student outcomes, although there is some evidence that students in single-sex schools score higher on academic achievement and report more positively in terms of educational aspirations than students in co-educational schools (Yu & Rodriguez-Hejazi, 2013). What this research suggests is the need to include single-sex/co-educational school structure in an analysis of the role of attending boarding school alongside other key socio-demographic covariates. Also, given that membership of a boarding school is confounded by gender composition (i.e., single-sex or co-educational), it is even more important to partial out variance due to gender composition at the school level to better understand unique influences of boarding on academic and non-academic outcomes.

2.14.4.2 School-average achievement.

Another important school-level variable to be considered in the current study is that of *school-average achievement*. Marsh's (1984, 1991a) hypothesis of the Big-

Fish-Little-Pond effect (BFLPE) predicts that students equal in ability will report lower academic self-concepts when attending schools where the school-average ability is high than when attending schools where the school-average ability is low. A large body of research has since confirmed Marsh and colleagues' hypothesis that students in low ability schools report higher levels of self-concept compared with students in high ability schools (Marsh & Parker, 1984). Ongoing research demonstrates that these BFLPE findings are robust and generalisable across a wide variety of differences in individual students, culture, contexts, settings, time, and research designs (see Marsh, 2007; Marsh & Hau, 2003; O'Mara & Marsh, 2007; Seaton, Marsh, & Craven, 2009, 2010). The BFLPE has also been found to influence individual differences in students' approaches to learning (Seaton, Marsh, & Craven, 2008). Important for the current study is the consideration of the potential negative effects of school-average ability on academic self-concept, achievement, and educational aspirations (Marsh, 1991a; Marsh & O'Mara, 2010). For these reasons, school-average ability is included alongside other important covariates already outlined so as to control for variance of these factors and to more clearly distinguish any gains or declines in academic and non-academic outcomes of day and boarding students.

2.14.5 Summary of covariates.

As is evident from the outline above, there is a range of individual, background, and school-level factors that need to be incorporated in this study to better assess the unique variance in academic and non-academic outcomes that may otherwise be attributed to student type (day/boarding status). To exclude these covariates would risk erroneously attributing variance to student type (day/boarding status) when in fact the variance is attributable to a covariate. The current study also

considers to what extent differences between day students and boarders can be explained by interaction effects of student type and a range of covariates (14 interaction terms) on academic and non-academic outcomes (19 outcomes; thus, a total of 14 × 19 = 266 interaction effects). It does this by examining whether interaction effects of student type with socio-demographic covariates (e.g., student type × gender, student type × language background, student type × Aboriginality, etc.) explain a greater variance of academic and non-academic outcomes than main effects of student type (i.e., day or boarding student). For example, if there are gender effects as a function of day/boarding status, these will be evident in significant interactions of student type × gender.

The full hypothesised process model can now be assembled (see Figure 2.4), including student type (day/boarding status), covariates (gender, age, language background, Indigenous cultural background, parents'/guardians' education, prior achievement, personality, school type, school-average achievement), and their interactions predicting academic outcomes (adaptive motivation, impeding motivation, maladaptive motivation, buoyancy, competitive learning, cooperative learning, PBs, enjoyment of school, educational aspirations, participation in class, homework completion, absenteeism) and non-academic outcomes (meaning and purpose, life satisfaction, emotional instability, ECA participation, peer relations, parent relations, teacher relations). This model represents the full cross-sectional model of the role of attending boarding school evaluated using Time 1 and Time 2 data (see Figure 4.1). This is further developed to include autoregressive paths of the effects of prior variance in outcomes to represent a longitudinal model (see Figure 4.2).

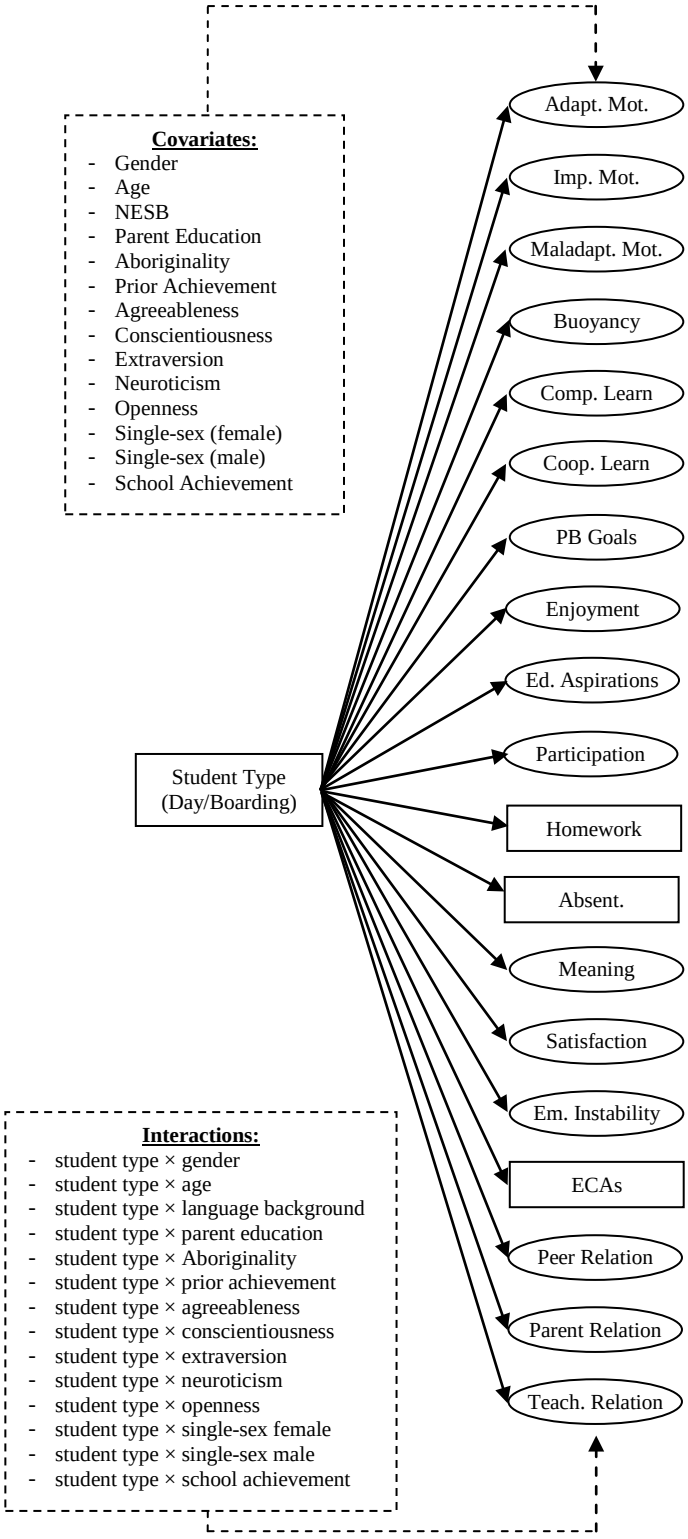

Figure 2.4. Full hypothesised process model including both academic and non-academic outcomes predicted by student type (day/boarding status), covariates, and interaction effects.

Adapt. Mot. = adaptive motivation, Imp. Mot. = impeding motivation, Maladapt. Mot. = maladaptive motivation, Comp. Learn. = competitive learning, Coop. Learn. = cooperative learning, Enjoyment = enjoyment of school, Ed Aspirations = educational aspirations, Participation = participation in class, Absent. = absenteeism, Meaning = meaning and purpose, Satisfaction = life satisfaction, Em. Instability = emotional instability, ECAs = extracurricular activities, Teach. Relation = teacher relations.

2.15 Chapter Summary

In summary, the review of theory and research outlined in this chapter has considered a number of key conceptual and theoretical perspectives which might be used to frame a study of the effects of boarding school. These include ecological systems theory, positive youth development, extracurricular activity, and attachment perspectives to better understand the phenomena under investigation. The review described a number of key academic measures (i.e., motivation, engagement, buoyancy, and approaches to learning) and non-academic measures (i.e., well-being, extracurricular activities, and interpersonal relations). The review also considered previous empirical boarding school research which focused on academic and non-academic outcomes relevant to the current study. Alongside the academic and non-academic outcomes deemed relevant to the current study, a range of salient covariates that should be included in such a study were also described. These include gender, age, language background, Indigenous cultural background (Aboriginality), parents'/guardians' education, prior achievement, personality traits (agreeableness, conscientiousness, extraversion, neuroticism, openness), school structure (single-sex male/female, co-educational), and school-average achievement. The following chapter uses the perspectives highlighted by the conceptual and empirical review to develop research questions which now frame this study of boarding school.

CHAPTER 3: RESEARCH QUESTIONS GUIDING THE STUDY

3.1 Introduction

The central aim of the present investigation is to empirically investigate the role of boarding school in students' academic and non-academic outcomes (see Figures 4.1 and 4.2). The study develops empirical cross-sectional and longitudinal models of student type (day/ boarding status) predicting academic and non-academic outcomes. The academic outcomes consist of 12 constructs, which include: adaptive motivation, impeding motivation, maladaptive motivation, academic buoyancy, competitive learning, cooperative learning, PBs, enjoyment of school, educational aspirations, class participation, homework completion, and absenteeism. The non-academic outcomes consist of seven constructs, which include: life satisfaction, meaning and purpose in life, emotional instability, ECAs, peer relations, parent relations, and teacher relations.

The study also controls for the effects of 14 covariates, which include: gender, age, language background, Indigenous cultural background (Aboriginality), parents'/guardians' education, prior achievement, personality traits (agreeableness, conscientiousness, extraversion, neuroticism, openness), school structure (single-sex male/female, co-educational), and school-average achievement. These covariates are also used to explore any interactions with day/boarding status. Finally, the longitudinal design underpins the current study enables testing of prior variance in students' academic and non-academic outcomes, thereby enabling statistical estimation of gains or declines in outcomes over the course of an academic year.

The proposed empirical model is first assessed via cross-sectional analysis. Analyses then assess the proposed empirical model via a longitudinal design, with

data collected one year apart. This therefore yields three sets of analyses, each assessing a different period of time: 1) a cross-section at Time 1, 2) a cross-section at Time 2, and lastly, 3) a longitudinal perspective based on students' (matched) Time 1 and Time 2 data.

3.2 Research Questions in the Cross-sectional and Longitudinal Studies

In light of the contested perspectives identified above, and the generally fragmented nature of research to date, it is difficult to make any concrete hypotheses about the influence of boarding. Instead, this study is, by and large, exploratory in nature and a series of research questions are posed based on the diverse theoretical and empirical terrain and gaps in previous boarding research outlined. Thus, to understand the academic and non-academic influence of attending boarding school, the proposed investigation seeks to address the following key questions:

- **Research Question 1:** Do day students and boarders differ in background characteristics (e.g., covariates such as gender, age, language background, Indigenous cultural background, parents'/guardians' education, prior achievement, or personality)?
- **Research Question 2:** When viewed cross-sectionally and accounting for any differences in background characteristics, do day students and boarders differ in academic and non-academic outcomes?
- **Research Question 3:** When viewed longitudinally and accounting for any differences in background characteristics and variance shared with prior academic and non-academic outcomes, do day students and boarders differentially gain or decline in academic and non-academic outcomes?

- **Research Question 4:** Are any effects of student type (day/boarding status) on academic and non-academic outcomes moderated by background characteristics?

3.3 Subsidiary Validation of Instrumentation

While research questions 1 to 4 are central to this thesis, it is important to recognise that there is a measurement component that underpins them. Thus, a subsidiary aim of this study is to also consider the psychometrics underpinning substantive models. This seeks to determine whether measures used in the instrumentation to assess the role of student type (day/boarding status) on academic and non-academic outcomes are valid. Inevitably, the empirical models exploring the role of boarding school rely on the sound measurement structures that underpin them. Hence, before estimating these empirical models, analyses seek to establish the psychometric properties of measures used in data collection. As such, a number of broad research questions are proposed in regard to assessing the psychometric properties of the instrument.

- **Subsidiary Question 1:** What are the distributional and reliability properties of central scales?
- **Subsidiary Question 2:** What is the nature of the factor structure of scales that underpin the instrument used to test the empirical models?
- **Subsidiary Question 3:** Do multi-group confirmatory factor analysis (CFA) tests of invariance for factor structure demonstrate invariance as a function of student type (i.e., day/boarding status), gender, language background, Indigenous cultural background (Aboriginality), school year-level (junior/senior high school) for Time 1 and Time 2 samples,

respectively, and between matched and unmatched samples at Time 1 and Time 2?

3.4 Chapter Summary

The current chapter outlined the central aim of the present investigation—to empirically investigate the role of boarding school in students' academic and non-academic outcomes. Based on conceptual and empirical perspectives presented earlier, a series of research questions were posed to provide a focus for the cross-sectional and longitudinal investigations, as well as validation of the instrumentation used in the study, which are further discussed below. The following chapters now present the methodology underpinning the investigation and the findings from cross-sectional and longitudinal phases of analyses.

CHAPTER 4: METHODOLOGY

The first phase of the study represents a cross-sectional study of day and boarding students; the second phase of the study extends on these cross-sectional data in a longitudinal study. This chapter outlines the methodology used to address the research questions posed under the cross-sectional and longitudinal phases of the current study.

4.1 Participants

Study participants comprised Australian day and boarding students in Years 7 to 12 from 13 schools across Australia (ensuring Indigenous and rural numbers—e.g., some boarding schools comprise $n > 200$ Indigenous students). Non-boarding (day) students are included in this study as they act as a useful comparison group by which to better understand the role of boarding school. Many schools offer full boarding, weekly boarding, and a range of other flexible boarding arrangements; however, due to terminology differing between schools and therefore students' understanding of the different types of boarding, for greater accuracy students were reported as either boarders or non-boarders (i.e., day students).

Schools were recruited from members of the Australian Boarding Schools Association at the time of the study as a vast majority (> 95%) of boarding schools were members of this peak body. From an initial eligibility list schools were purposefully selected in order to reflect the broad cross-section of boarding schools in the sector, taking into consideration the number in different states, urban/rural settings, denominational/non-denominational, and gender composition. Schools not selected to participate in the boarding school study were offered the chance to participate in a related study. No incentives were provided to schools (or students) to participate; however, all schools were offered a summary report of the study's

findings. Although not intended to be representative of the Australian population of high schools, the selection of schools represents a cross-section that has been designed to comprise enough students to yield broadly generalisable results. The sampling of students and schools has aimed to be representative of the proportion of students, by gender, age, and student type, as well as schools, by type, size, and religious affiliation, distributed across metropolitan and provincial boarding schools, and across most States or Territories of Australia. Thus, sampling sought to gain representation from urban and non-urban areas, single-sex and co-educational schools, and schools with relatively larger Indigenous and rural student populations. Assistance from the Australian Boarding Schools Association (ABSA) enhanced reach across the boarding sector.

4.1.1 Time 1 sample.

Participants in the study at Time 1 comprised 5,198 students from 13 high schools, including 50 boarding houses/residences from across Australia, of which 29% were boarding students and 71% were day students. Schools in the sample were comprehensive boarding schools of mixed ability (but generally higher in achievement and SES than the national average), with six schools from metropolitan and seven from provincial areas of Australia (as classified by the Australian Curriculum, Assessment and Reporting Authority, ACARA). Seven schools were co-educational, three schools comprised boys only, and three schools comprised girls only. Just over half (56%) of the respondents were male and 44% were female. In terms of level of schooling, 51% of students were in junior high year-levels 7 to 9 (approx. 12 to 15 years) and 49% in senior high year-levels 10 to 12 (approx. 16 to 18 years). The mean age of respondents was 14.35 (*SD* = 1.69) years and the mean year-level was between Years 9 to 10 (*SD* = 1.63). It is more common in Australia

for students to begin boarding later in secondary school and hence why the average length of boarding is only a few years. For boarding students, the average time at boarding school was between one to two years. A total of 10% of the sample was from a non-English speaking background (NESB) and 5% of students were of Indigenous cultural background. Further information regarding Time 1 sample characteristics is available in Appendix C Table C.1.

In terms of SES, based on postcode data publicly available on theAustralian Bureau of Statistics (ABS, 2013) Socio-Economic Indexes for Areas (SEIFA, 2011) website, the mean Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) of students was 1,041 (range: 712 to 1,214). This is higher than the mean for Australia of 1,000, whereby a high score indicates a relative lack of disadvantage and greater advantage in general. Approximately half (49%) of the parents of students surveyed were reported as having a university qualification, 32% had attained college/training level qualifications as their highest level of education, 17% had attained secondary school qualifications, and less than 2% had no formal education qualifications.

4.1.2 Time 2 sample.

Participants in the study at Time 2 comprised 5,276 students from across 12 of the 13 high schools[3] surveyed at Time 1, of which 28% were boarding students and 72% were day students. Again, just over half (57%) of the respondents were male and 43% were female. In terms of level of schooling, 49% of students were in junior high year-levels 7 to 9 (approx. 12 to 15 years) and 51% in senior high year-levels 10 to 12 (approx. 16 to 18 years). The mean age of respondents was 14.41 (*SD* = 1.61) years and the mean year-level was between Years 9 to 10 (*SD* = 1.57). The

[3] One Time 1 school was dropped from Time 2 as very few consent forms were returned by parents.

average time of boarders attending boarding school remained the same (one to two years). A total of 9% of the sample indicated they were from a NESB and again 5% of students in the sample were of Indigenous cultural background. Less than half (43%) of the parents of students surveyed were reported as having a university qualification, 35% had attained college/training level qualifications as their highest level of education, 20% had attained secondary school qualifications, and 1% had no formal education qualifications. Appendix C Table C.1 provides further Time 2 sample characteristics.

4.1.3 Matched Time 1 and Time 2 sample.

Participants in the longitudinal study comprised 2,002 students from across the 12 high schools common to both Time 1 and Time 2, of which 31% were boarding students and 69% were day students. Again, just over half (58%) of the respondents were male and 42% were female. In terms of level of schooling, 40% of students were in junior high year-levels 7 to 9 (approx. 12 to 15 years) and 60% in senior high year-levels 10 to 12 (approx. 16 to 18 years). The mean age of respondents was 14.90 (*SD* = 1.36) years and the mean year-level was closer to Year 10 (*SD* = 1.33). The average time of boarders attending boarding school increased to between two to three years. A total of 8% of the sample indicated they were from a NESB and 4% of students in the sample were of Indigenous cultural background. Less than half (44%) of the parents of students surveyed were reported as having a university qualification, 33% had attained college/training level qualifications as their highest level of education, 18% had attained secondary school qualifications, and 1.1% had no formal education qualifications. Further information regarding Time 1—Time 2 sample characteristics is available in Appendix C Table C.1.

4.2 Procedure and Participation

The appropriate ethics approval from the University of Sydney Human Research Ethics Committee was gained prior to commencing the research project. Schools were recruited via the industry partner, the ABSA, and other sector contacts the researcher had at various boarding schools. Information outlining the research project was sent to the principal of each school (see Appendix D) as well as a consent form (see Appendix E), which principals were required to sign and return, agreeing to participate, and acknowledging the voluntary and confidential nature of participation for the school and students.

4.2.1 Time 1 and Time 2.

Schools were sent an electronic and physical copy of *Parent/Guardian Participant Information Statement* and *Consent* forms (see Appendix F & G) to be distributed to each student and in this way students were similarly advised of the aims of the research project, the voluntary and confidential nature of participation, and the option to withdraw from the research project at any time. Only those students who returned a signed consent form were allowed to participate. Students in the second year of the study were re-issued with the information statement and consent form to ensure that all students were well informed about the aims of the study and had provided consent to participate.

For all students (except Time 1 Year 12 students who will have completed school), there was a second administration of Time 1 instrumentation one year later (Time 2). At Time 2, the sample was refreshed with a new Year 7 cohort which captured the bulk of students across two academic years and two “stage to stage” (junior to middle high; middle to senior high) transitions.

With few exceptions, whole-school populations were sought and all targeted students in attendance on the day participated in the survey, with the procedure at Time 1 and Time 2 being identical. Surveys were delivered to schools bundled in sets for each class and with a set of instructions for teachers detailing the correct administration of the questionnaire (see Appendix H). Teachers administered the instrument (questionnaire) to students during normal class time with approximately 45 minutes allocated for students to complete the survey.

Before completing the questionnaire, students were asked to provide the first two letters of their surname, first two letters of their first name, month of birth, and last two digits of their home or mobile phone number, which allowed the researcher to create a unique identification number that could be used to identify responses for matching Time 1 and Time 2 data for longitudinal analyses, as well as ensuring the anonymity of all participants.

The rating scale was then explained to students and a sample item presented. Students were also advised that they could ask the teacher to clarify particular questions or meanings (e.g., levels of parents'/guardians' education). Students were then asked to complete the questionnaire on their own and to return the completed questionnaire to the teacher at the end of class. These were then sealed in an envelope and returned to a central location at the school to be boxed up and collected.

4.3 Instrumentation

Three sets of measures informed this study: 1) academic measures, 2) non-academic measures, and 3) background and general student characteristics. These were developed into a single instrument (see student questionnaire; Appendix I). Rather than writing new items and piloting these with students, items for the

questionnaire were drawn from standardised instruments or instruments with proven reliability and validity with secondary school students. Psychometric (e.g., reliability) and distributional properties (e.g., mean, skewness) properties of the measures are reported in each Results chapter.

4.3.1 Academic measures.

Academic measures spanned motivation, engagement, and prior achievement.

4.3.1.1 Motivation.

Academic motivation was assessed via the Motivation and Engagement Scale—High School (MES-HS). The MES-HS (Martin, 2007, 2008, 2009b) is a 44-item instrument comprising six adaptive dimensions of motivation (self-efficacy, valuing of school, mastery orientation, planning, persistence, task management), three impeding dimensions (anxiety, uncertain control, failure avoidance), and two maladaptive dimensions (self-handicapping, disengagement).

Adaptive dimensions include *self-efficacy* (e.g., “If I try hard, I believe I can do my schoolwork well”), *valuing of school* (e.g., “I am able to use some of the things I learn at school in other parts of my life”), *mastery orientation* (e.g., “I feel very pleased with myself when I do well at school by working hard”), *planning* (e.g., “I get it clear in my head what I’m going to do when I sit down to study”), *persistence* (e.g., “If I can’t understand my schoolwork at first, I keep going over it until I understand it”), and *task management* (e.g., “When I study, I usually organise my study area to help me study best”).

Impeding dimensions are *anxiety* (e.g., “When I do tests or exams I don’t feel very good”), *uncertain control* (e.g., “When I don’t do so well at school I’m often unsure how to avoid that happening again”), and *failure avoidance* (e.g., “Often the main reason I work at school is because I don’t want people to think I’m dumb”).

Maladaptive dimensions are *self-handicapping* (e.g., “Sometimes I don’t try hard at assignments so I have an excuse if I don’t do so well”) and *disengagement* (e.g., “Each week I am trying less and less”).

Each of the 11 component factors were comprised of four items and rated on a scale of *Disagree Strongly* (1) to *Agree Strongly* (7). Martin (2007, 2009b) has confirmed a strong first-order and higher-order factor structure and has also demonstrated sound reliability of scales. Factors in the MES have shown to be significantly associated with literacy and numeracy as well as being sensitive to age and gender-related differences in motivation.

4.3.1.2 Academic engagement.

Enjoyment of school is a cognitive-affective measure of students’ willingness and happiness to attend school while *educational aspirations* is a measure of a students’ future orientations to education (Martin & Marsh, 2005, 2006). Example items for enjoyment of school include “I like my school”, and for educational aspirations, “I intend to complete school”. *Class participation* is adapted from Martin (2007, 2008, 2009a, 2009b, 2010b; see also Martin, Green, & Marsh, 2004, Martin & Marsh, 2006, 2008b), who shows this scale to be reliable, a good fit to the data in confirmatory factor analyses, and significantly associated with motivation in other performance domains such as sport, music, and the workplace. This scale measures students’ level of involvement in class activities. An example item is “I get involved in things we do in class”. Measures of enjoyment of school, educational aspirations, and class participation consist of four items each and students rated on a scale of *Disagree Strongly* (1) to *Agree Strongly* (7).

Behaviours relevant to students’ achievement include school absenteeism and homework completion—see Martin (2009a) for validity of these measures. Students

were asked to report their *absenteeism* from school by approximating the number of days absent in the previous term ("About how many days were you absent from school last term?"), which was capped at 60 days or no more than one school term, as well as asking the main reason for these absences. Students were also asked to report *homework completion* on a five-point scale with poles of *Never* (1) and *Always* (5), which measured the frequency with which respondents completed homework. Both homework completion and absenteeism were single-item measures.

4.3.1.3 Academic buoyancy.

Academic buoyancy is defined by Martin and Marsh (2008a) as "students' ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life (e.g., poor grades, competing deadlines, exam pressure, difficult schoolwork)" (p. 54). They also argue that academic buoyancy is distinct from the traditional "resilience" construct as it is a measure centred on an individual's response to everyday academic challenges rather than an individual's response to chronic and/or acute adversity (Martin & Marsh, 2008a).

Academic buoyancy is assessed via the Academic Buoyancy Scale developed by Martin and Marsh (2008a, 2008b) appropriate for administration to school students. The Academic Buoyancy Scale is an instrument that measures students' capacity to deal with academic adversity, setback, and pressure. Australian data have demonstrated the Academic Buoyancy Scale to possess a sound factor structure that is reliable and valid against key educational outcomes such as engagement and achievement (Martin & Marsh, 2008a, 2008b). An example item of the buoyancy measure is "I don't let a bad mark affect my confidence". This scale comprised four items and rated on a scale of *Disagree Strongly* (1) to *Agree Strongly* (7).

4.3.1.4 Student approaches to learning.

Student approaches to learning (SAL) is a standardised psychometric instrument used in OECD's PISA studies measuring effective academic functioning. Marsh et al. (2006) show that SAL's psychometric properties (reliability, factor structure, construct validity) were invariant across nationally representative samples from 25 countries. The *cooperative learning* scale consists of five items and asks students about the extent to which they like to work with other students. An example of the items is "It is helpful to put together everyone's ideas when working on a project". The *competitive learning* scale consists of four items and measures the extent to which students like to compete with others. An example of the items is "I like to try to be better than other students". Both scales are rated on a scale of *Disagree Strongly* (1) to *Agree Strongly* (7).

The present study also includes another factor—*personal best goals (PBs)*—that is grouped under the SAL concept. PBs are defined as specific, challenging, competitively self-referenced targets that students strive towards. Sample items are "When I do my schoolwork I try to do it better than I've done before" and "When I do my schoolwork I try to get a better result than I've got before" (Martin, 2006b; Martin & Liem, 2010). This measure comprises four items, is rated on a *Disagree Strongly* (1) to *Agree Strongly* (7) scale, and has been validated in previous research on engagement and achievement (Martin, 2006b; Martin & Liem, 2010; Liem, Ginns, Martin, Stone, & Herrett, 2012).

4.3.1.5 Prior achievement.

Achievement in the form of self-reported National Assessment Program for Literacy and Numeracy (NAPLAN) results were used. NAPLAN is a nationally standardised test administered by the Australian Curriculum, Assessment and

Reporting Authority (ACARA) and students receive a score in both literacy and numeracy domains. Students were asked to recall their most recent NAPLAN results and score their achievement for literacy and numeracy on a 10-point scale with poles of *Band (Low)* (1) and *Band (High)* (10) measuring the scores they received. For completeness, these were compared against actual NAPLAN results for a sub-sample of students and it was found there was no significant difference between self-report and actual NAPLAN literacy scores, $t(340) = 0.17$, $p = .868$ and NAPLAN numeracy scores, $t(339) = 0.45$, $p = .654$, based on the results of paired samples *t*-tests. This is consistent with prior studies of self-reported achievement showing that students' self-reported grades align with authentic results, are not markedly affected by systematic bias (e.g., Dickhäuser & Plenter, 2005), and generally predict outcomes to a similar extent as students' actual grades (Hattie, 2009; Kuncel, Credé, & Thomas, 2005).

4.3.2 Non-academic measures.

Non-academic measures assessed life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985), meaning and purpose (WHOQoL, 1998), emotional stability, parent-child and peer self-concept (Marsh, Byrne, & Yeung, 1999; Marsh, Ellis, Parada, Richards, & Heubeck, 2005), students' relationship with teachers, and students' extracurricular involvements (see Martin & Marsh, 2008a; Martin, Marsh, McInerney, Green, & Dowson, 2007).

4.3.2.1 Life satisfaction.

The Satisfaction with Life Scale consists of five items and is a measure of a person's assessment of quality of life based on their own criteria. Life satisfaction is a component of SWB and a measure of global life satisfaction (Diener et al., 1985). An example item is "I am satisfied with my life", which students rated on a scale of

Disagree Strongly (1) to *Agree Strongly* (7). Internal consistency of the Satisfaction with Life Scale has previously been shown to be very good with a reliability of α = .85 found by Pavot and Diener (1993; see also Vassar, 2008).

4.3.2.2 Meaning and purpose.

The *meaning and purpose* scale was adapted from WHOQoL (1998) and measured students' perception of personal beliefs and whether they gave meaning to their lives; for example, "I feel my life is meaningful". The meaning and purpose scale consists of five items, rated on a *Disagree Strongly* (1) to *Agree Strongly* (7) continuum. The scale has previously shown strong reliability (WHOQoL, 1998).

4.3.2.3 Emotional stability.

Emotional stability is described as a student's self-perception as being "calm and relaxed, emotionally stable, and how much they worry" (Marsh et al., 2005, p. 102). These items were framed from the perspective of *emotional instability*; for example, "I worry about a lot of things". Emotional instability consists of five items, each rated on a *Disagree Strongly* (1) to *Agree Strongly* (7) scale. Previous work has demonstrated sound reliability for emotional stability, α = .85 (Marsh et al., 2005).

4.3.2.4 Interpersonal Relationships.

The importance of relationships to students' efficacy in life has been demonstrated by a great deal of research and is considered a key enabling/protective factor in young people's experience of school (Martin & Dowson, 2009). Of particular focus in this research is the role of boarding school in peer, parent, and teacher-student relationships (from Martin & Marsh, 2008a). The *teacher-student relationship* scale (hereafter called *teacher relationships*) is a measure of a student's perception of having a good or positive relationship with their teachers and consists

of four items; for example, “In general, my teachers really listen to what I have to say” (Martin et al., 2007).

Parent-child relationship (hereafter called *parent relationships*) is described as a student’s self-perception of their relationship with parents—whether they like their parents and the quality of their interactions; an example item being, “My parents understand me”. Marsh et al.’s (2005) measure of same-sex relationships and opposite-sex relationships were combined to form a generic scale of *peer relationships*. This scale measured students’ self-perceptions of how well they get along with and their popularity with peers; for example, “Overall, I get along well with other students at this school”. Parent and peer relationships scales both consist of four items, each rated on a *Disagree Strongly* (1) to *Agree Strongly* (7) scale. Previous work has demonstrated sound Cronbach’s alphas for parent relationships (.88) and relationships with peers (.85 to .91) (Marsh et al., 2005).

4.3.2.5 Extracurricular activities.

Students were asked to think about their *participation in extracurricular activities (ECAs)* before or after school and on weekends. Students were asked to tick one or more activities in the areas of school involvement, academic activities/clubs, sports, prosocial activities, as well as self-nominated activities. Student responses were counted to generate an extracurricular factor, which indicated the number of ECAs in which students participated that year. Items were based on studies by Eccles and Barber (1999) and Feldman and Matjasko (2005), and included school involvement activities (e.g., “providing peer counselling/peer support”, “school projects—social activities, fundraising, etc.”, “student newspaper or magazine”, “student service, leadership or government”), academic activities/clubs (“academic clubs or activities”, “academic tutoring”, “debating/public speaking/mock trials”,

"hobby clubs—agriculture, robotics, woodwork or metalwork, etc."), sports ("team sport" or "individual sport"), and prosocial activities ("overseas exchange", "performing arts—art, dance, drama, band, orchestra, choir", "outdoor activities—e.g., Cadets or Duke of Edinburgh Award", "community service, social justice or volunteering", "student fellowship, ministry or church"), as well as an open-ended option ("other: _____"). A sum of students' involvement in these activities was used as an indicator for breadth of ECA participation.

4.3.3 Background and general characteristics.

4.3.3.1 Socio-demographics.

To contextualise the analyses, data were also collected on background and other general characteristics and attributes including: student type (coded 1 = day student; 2 = boarding student), gender (coded 1 = female; 2 = male), age, year-level, language spoken at home (coded 1 = English speaking background; 2 = NESB), time at boarding school, and Indigenous cultural background or Aboriginality (coded 1 = Indigenous; 2 = non-Indigenous). Data on parents'/caregivers' education (used as an ordinal scale from lower levels of education through to higher levels of education) were also collected (based on the standard ABS classification; Trewin, 2001).

4.3.3.2 School attributes.

Participant schools were also classified in terms of school structure (single-sex female, single-sex male, and co-educational) collated from data publicly available on the My School website (ACARA, 2011). School-average achievement was also collated from data publicly available on the My School website (ACARA, 2011). These were included to understand their role in predicting academic and non-academic outcomes and also their role as covariates, so the unique role of boarding

school in outcomes were identified, after controlling for these effects of background and general attributes.

4.3.3.3 Personality.

It was also considered important to control for personality. Students with particular personality types may be more likely to be sent or deemed suitable for boarding school. Alternatively, it may be that students differ in their experience of (or response to) boarding school because of relatively stable personality traits; for instance, more "extroverted" students may align better with boarding than more "introverted" students. For example, in a recent meta-analysis of personality-academic performance relationships, Poropat (2009) finds significant correlations between academic performance and conscientiousness, agreeableness, and openness. To control for the influence of personality, a recently developed set of scales based on the Big-Five model of personality (Digman, 1990; Goldberg, 1992; McRae & Costa, 2008), the International English Big-Five Mini-Markers (IEBM; Thompson, 2008), was used to investigate the role of personality as a covariate or moderator in day students' and boarders' academic and non-academic outcomes.

Thompson examines Saucier's (1994) Big-Five Mini-Markers to develop and validate an IEBM with better factor structure, higher scale internal reliabilities, and greater orthogonality of latent factors than the original set of items. Comprising 40 single-adjective personality descriptors originally selected for their psychometric qualities, the IEMB has proven to be reliable (Thompson, 2008). Thompson's original measure was anchored on a five-point scale from accurate to inaccurate to maximise brevity; however, in the current application it was adapted to suit a seven-point scale similar to others used in this research with anchors of *Very Inaccurate*

(1), *Moderately Inaccurate* (2), *Slightly Inaccurate* (3), *Neither Inaccurate Nor Accurate* (4), *Slightly Accurate* (5), *Moderately Accurate* (6), and *Very Accurate* (7).

The factors in this study were agreeableness, conscientiousness, extraversion, neuroticism and openness. *Agreeableness* measured participants' tendency to be compassionate and cooperative towards others, comparing participants' friendliness versus unkindness. This consists of eight adjectives, four positively worded (e.g., "kind") and four negatively worded (e.g., "harsh"). *Conscientiousness* measured participants' tendency to show self-discipline and aim for achievement, comparing participants' organised versus spontaneous behaviour. This consists of eight adjectives, four positively worded (e.g., "efficient") and four negatively worded (e.g., "disorganised"). *Extraversion* measured participants' outgoing or energetic nature versus solitary or reserved nature and thus their positive emotions and tendency to seek stimulation in the company of others. This consists of eight adjectives, four positively worded (e.g., "energetic") and four negatively worded (e.g., "reserved"). *Neuroticism* measured participants' emotional stability and tendency to worry and to experience unpleasant emotions easily (e.g., anger, anxiety, or depression), comparing participants' sense of nervousness versus security. This consists of eight adjectives, five positively worded (e.g., "moody") and three negatively worded (e.g., "unworried"). *Openness* (or intellect) measured participants' "openness" to a variety of experience or appreciation of art, adventure or curiosity, comparing participants' curious versus cautious approach. This consists of eight adjectives, six positively worded (e.g., "philosophical") and two negatively worded (e.g., "unimaginative") (see Digman, 1990; Goldberg, 1992; McRae & Costa, 2008; Poropat, 2009; Srivastava, 2011 for further description of these traits).

4.4 Statistical Analyses

As previously indicated, statistical analysis comprised assessing the reliability and validity of the instrument and assessing the measurement and structural components of the hypothesised model. Data were initially analysed in PASW Statistics v18.0 (previously known as SPSS) to provide basic descriptive information and to assess the distribution of the data. PASW was also used to screen for missing data, data entry errors, univariate and multivariate outliers, checking for assumptions of normality and linearity, as well as scale reliability. Multi-group tests of invariance, confirmatory factor analysis, and structural equation modelling were performed in M*plus* 7.

4.4.1 Descriptive statistics and reliability.

4.4.1.1 Preliminary descriptive findings.

Basic descriptive information on sample characteristics and distributional characteristics of the data were explored. Distributional properties of scales included range, mean, standard deviation, skewness, and kurtosis. Scale scores for each factor were also created by calculating the mean scale score for each factor. A follow-up study of student attributes using chi-squared (χ^2) analyses and *t*-tests was conducted to better understand the unique characteristics of day and boarding students, and to shed light on possible influences on different outcomes for these two groups under study.

Reliability refers to the internal consistency of a set of items and the extent to which they represent a single construct (Cohen & Lea, 2004). In the current research, reliability was assessed by way of Cronbach's alpha. Cronbach's alpha assumes equivalence of all items (McMillan & Schumacher, 2006) and reliability coefficients range from 0 to 1 with values of .70 and above generally considered to represent an

acceptable level of reliability (Anastasi & Urbina, 1997; Field, 2009; Sattler, 2001). While Cronbach's alpha is a popular method for assessing reliability of items to form a single construct, it is not a flawless technique (Grayson, 2004) and is often criticised as a poor measure of reliability as a high alpha does not always indicate that the measure is unidimensional. The unidimensional nature of constructs was thus further examined in Confirmatory Factor Analysis (CFA, see below) through a factor structure of responses to the items that are purported to measure a construct by assessing the items' factor loadings, with high factor loadings representing strong internal validity and confirming that the scales reached acceptable levels of internal consistency. Reliability coefficients were calculated for all psychometric scales used in the project (i.e., personality, motivation, approaches to learning, buoyancy, enjoyment, educational aspirations, class participation, meaning and purpose, life satisfaction, emotional stability, peer, parent, and teacher relationship scales).

4.4.2 Analysis of the central model.

4.4.2.1 Confirmatory factor analysis.

The underlying factor structure of the instrument was examined using confirmatory factor analysis (CFA) to demonstrate sound multidimensionality. This analysis represents the measurement part of the model and the extent to which the observed variables (items) of the instrument reflect the structure of underlying latent constructs. This technique allows the researcher to load particular items onto a theoretically derived factor structure (structural model) and test to see whether this structure fits the data (Byrne, 2011; Quintana & Maxwell, 1999).

Typically the researcher assumes an *a priori* factor structure whereby structural relationships have already been hypothesised (based on theory or on empirical evidence). While there are no well-established criteria, the general

approach to test whether the proposed model fits the data is by demonstrating that: (a) the solution is well defined and parameter estimates are acceptable, (b) parameter estimates are consistent with common sense, theory and *a priori* predictions, and (c) fit indices are acceptable when compared against alternative models (Marsh & Balla, 1994). CFA is thus a theory-testing method for assessing a model representing the relationships between factor loadings, factor variances-covariances, and error terms (called uniquenesses) for each measured variable. CFA at both Time 1 and Time 2 were conducted using M*plus* 7. Maximum likelihood estimation with robust standard errors (MLR; Muthén & Muthén, 1998–2012) was the method used for model estimation as it is generally regarded as one of the most robust methods to handle non-normal and non-independent observations when used with the "complex" command, especially when performing CFA on moderate to large sample sizes such as in this research. This generates a set of goodness-of-fit measures that can be used to assess how closely the hypothesised model represents the data collected (Byrne, 2011).

4.4.2.2 Multi-group tests of invariance.

While CFA and reliability analyses allow the researcher to examine whether the scales underpinning the instrument are psychometrically sound for a generalised sample, multi-group tests of invariance allow the researcher to examine whether the hypothesised factor structure is operating equivalently (and is invariant) across particular sub-groups (e.g., age, gender, language background, etc.) within a sample (Byrne, 2011). While most studies have tended to focus on mean-level differences between groups (e.g., differences in mean scores as a function of gender, age or year-level), less attention is typically given to the possible differences in factor structure between groups (Martin, 2004, 2007). This key assumption, that the same construct

is invariant across different groups, must be tested before it is valid to pool data across groups (MacCallum & Austin, 2000; Marsh, 1993). For the integrity of the analysis, and considering the lack of research relating to the role of boarding school generally, the current research utilised multi-group invariance testing in order to confirm the relative equivalence in factor structure across a total of $14 \times 19 = 266$ interaction effects, gender, school year-level, language background, Indigenous cultural background, and matched and unmatched samples at Time 1 and Time 2.

The current research employed successive multi-group CFA models to test whether the factor structure underpinning the instrument used in the study was invariant across all groups by comparing goodness-of-fit measures across successively constrained models. Five increasingly restrictive models were tested across student type (day vs. boarding), gender, school year-level (junior vs. senior high school), language background (ESB vs. NESB), Indigenous cultural background (Indigenous vs. non-Indigenous), and matched and unmatched samples at Time 1 and Time 2. The first multi-group CFA, where no parameters were constrained, can be considered the baseline model. Successive models were slightly more restrictive than the first model, with selected parameters held invariant across groups. Hence, the second multi-group CFA holds the factor loadings invariant; the third holds both factor loadings and uniquenesses invariant; the fourth holds both factor loadings and factor correlations invariant; while the fifth is the most constrained and stringent by holding factor loadings, uniquenesses, and factor correlations invariant across groups The baseline model was compared to successive models to see whether changes in the comparative fit index (CFI) (as described by Cheung & Rensvold, 2002) and Root Mean Square Error of Approximation (RMSEA) (see Chen, 2007) meet the criteria of $\Delta CFI < .01$ and $\Delta RMSEA < .015$.

4.4.3 Structural equation modelling.

Structural equation modelling (SEM) combines both the measurement and structural parts of the model in one analysis in order to examine the relationships between predictors and outcome variables. The measurement part of the model is assessed via CFA (described above) and refers to how the latent constructs of the model are measured by the observed variables. The structural part of the model is assessed via SEM and refers to the inter-relations between latent variables (see Byrne, 2011; MacCallum & Austin, 2000). Given the complexity of the proposed *a priori* model under investigation, SEM was chosen as the most integrative method of analysis as this approach allows all structural relationships to be examined simultaneously (including structural, measurement, and error paths), while also providing goodness-of-fit indices to evaluate the entire model and significance levels of individual parameters modelled (Schumacker & Lomax, 2010). Cross-sectional modelling of the role of attending boarding school in academic and non-academic outcomes is thus illustrated in Figure 4.1. Subsequent longitudinal modelling of the gains and declines in day and boarding students' academic and non-academic outcomes is illustrated in Figure 4.2.

Data in the social sciences often contain a portion of measurement error and SEM has the advantage over traditional regression approaches because it uses latent constructs to account for measurement error, addressing the measurement error limitations associated with multiple regression techniques. As a result, SEM allows researchers to estimate relationships between constructs that are purged of measurement error, and multiple dependent variables can be assessed in the one model (Chin, 1998; Kline, 2011; Quintana & Maxwell, 1999; Schumacker & Lomax, 2010). In this way, SEM is capable of testing substantive questions about relations

between multiple (latent) predictors (e.g., student type, gender, age, personality) and multiple dependent (latent) variables (e.g., motivation, engagement, SAL, life satisfaction), as is the case in the current investigation.

The present study conducted analyses in five steps, akin to multiple hierarchical regression. Step 1 included student type (day/boarding status) as the sole predictor of outcomes. Student type was included first because it was of interest to examine how its role is systematically influenced as subsequent predictors are entered into the model. This provides useful guidance as to factors that operate alongside student type to affect its relationship with academic and non-academic outcomes. Step 2 added socio-demographic covariates to the model, followed by prior achievement (Step 3), then personality (Step 4), and lastly, school-level factors (Step 5) to the model to ascertain change in explained variance and standardised regression paths (beta parameters) for day/boarding status as a function of including these school factors. Further follow-up analysis was conducted to consider the moderating (interaction) effects of each covariate set to better identify which of these were uniquely influencing the effects of student type (day/boarding status) more or less than others. In order to do this, SEM was conducted on the full model separately for each covariate set (socio-demographics, prior achievement, and personality) with student type being the focal predictor at each step.

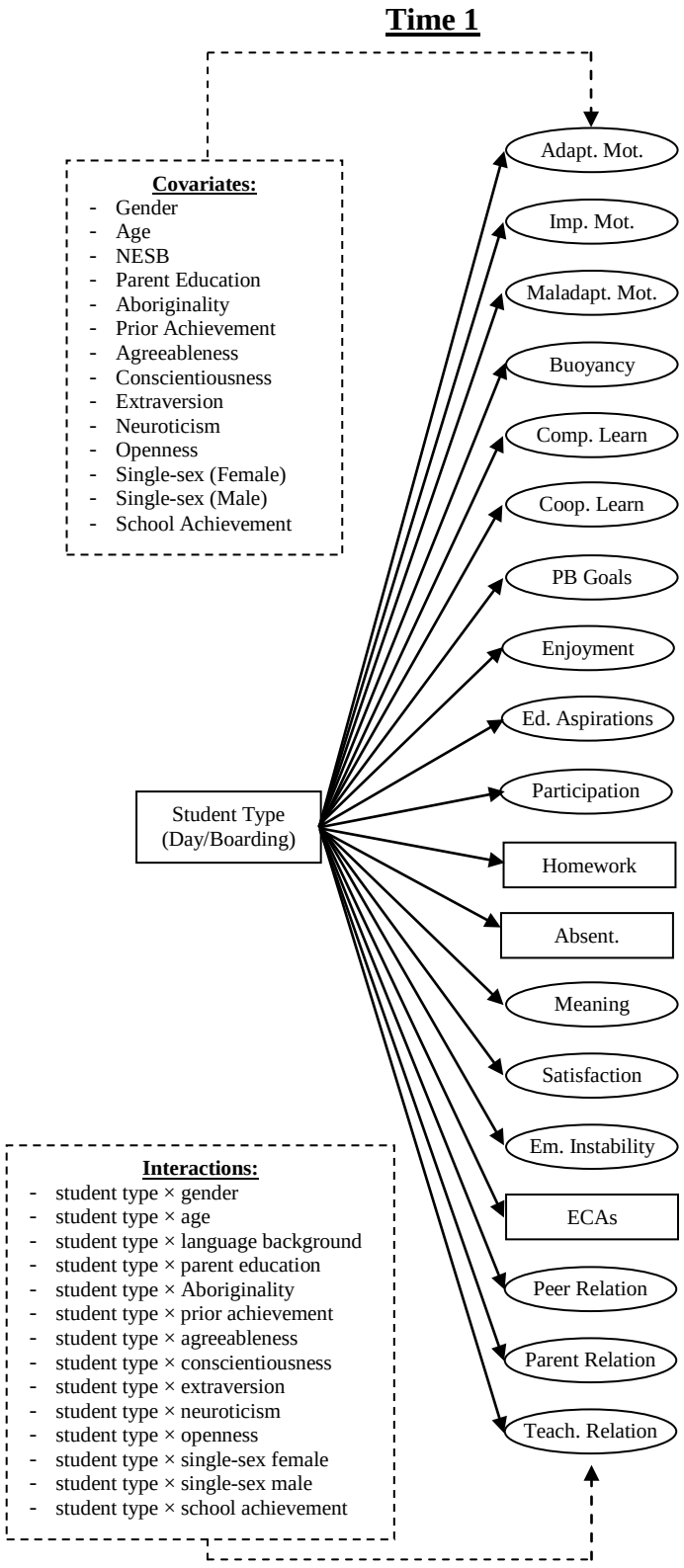

Figure 4.1. Cross-sectional modelling of the role of boarding school (student type: day/boarding status) on academic and non-academic outcomes.

Adapt. Mot. = adaptive motivation, Imp. Mot. = impeding motivation, Maladapt. Mot. = maladaptive motivation, Comp. Learn. = competitive learning, Coop. Learn. = cooperative learning, Enjoyment = enjoyment of school, Ed Aspirations = educational aspirations, Participation = participation in class, Absent. = absenteeism, Meaning = meaning and purpose, Satisfaction = life satisfaction, Em. Instability = emotional instability, ECAs = extracurricular activities, Teach. Relation = teacher relations.

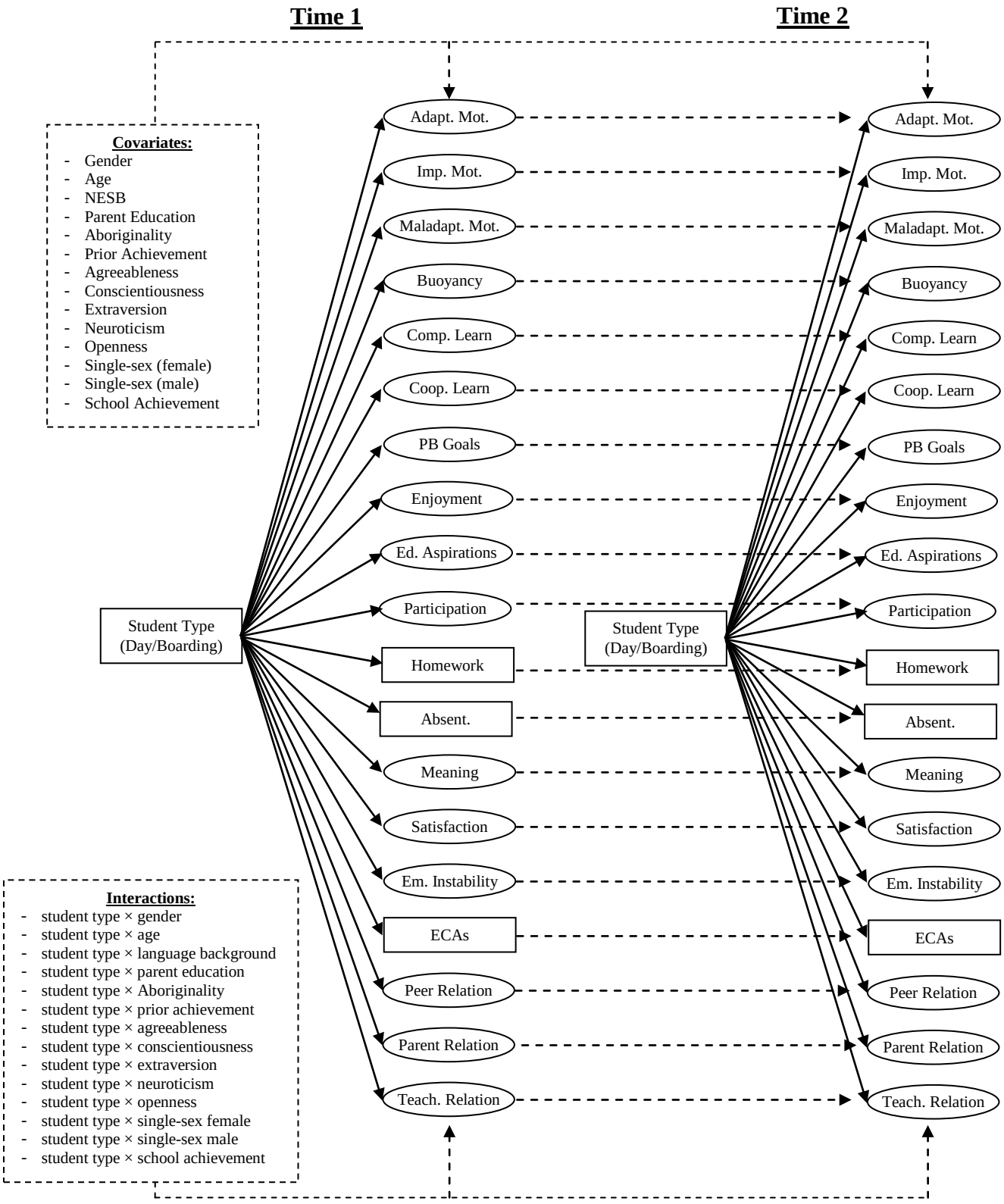

Figure 4.2. Longitudinal modelling of the role of boarding school (student type: day/boarding status) on academic and non-academic outcomes.

Adapt. Mot. = adaptive motivation, Imp. Mot. = impeding motivation, Maladapt. Mot. = maladaptive motivation, Comp. Learn. = competitive learning, Coop. Learn. = cooperative learning, Enjoyment = enjoyment of school, Ed Aspirations = educational aspirations, Participation = participation in class, Absent. = absenteeism, Meaning = meaning and purpose, Satisfaction = life satisfaction, Em. Instability = emotional instability, ECAs = extracurricular activities, Teach. Relation = teacher relations.

4.4.3.1 Modelling longitudinal effects.

A key aim of this research is to understand the role of boarding school over time. The longitudinal phase of modelling seeks to confirm the consistency of the structural model over time by exploring the relationships of constructs at one time point and constructs at a later time (see Farrell, 1994, for a review). Again, student type was included as the first step in longitudinal SEM as it was of central interest to determine how its effects are systematically moderated as prior variance and then subsequent predictors are entered into the model. An advantage of this approach is that it controls for prior variance between Time 1 and Time 2 constructs and so better estimates unique variance attributable to the predictors (Martin & Marsh, 2008a). It also yields key information relating to the validity of the hypothesised model. Importantly, it allowed investigation of the longitudinal model to be assessed providing a strong test for whether the model at Time 2 explained variance over and above that which was predicted by prior variance in the constructs at Time 1 (Rosel & Plewis, 2008).

4.4.3.2 Statistical considerations in structural equation modelling.

The aim of SEM is to test whether the covariance matrix of the hypothesised model is equal to the covariance of the observed variables in the population sampled (i.e., whether the covariances of the hypothesised model fits the covariances of the data collected) (Chin, 1998; McCoach, Black, & O'Connell, 2007). Achieving adequate statistical power in SEM is a critical issue, as it is with traditional statistical analyses, as it provides the ability to detect or reject a poor fitting model. Statistical power is reliant on: (a) the level of statistical significance applied in the test, (b) the magnitude of the effect being measured in the population, and (c) the size of the sample used to detect the effect (Murphy & Myors, 2004). Importantly, sample size

determines the amount of measurement error inherent in a test and therefore needs to be considered when designing an investigation and also during analysis as effects can be harder to detect in smaller samples.

4.4.3.3 Sample size and power.

Sample size is an important consideration as sample size and appropriateness of the statistical analysis are inexorably linked. Determining a target sample size prior to an investigation is often difficult because participation is often reliant on access to and the goodwill of participants. Nevertheless, while there are no set rules of establishing minimum levels of sample size (MacCallum & Austin, 2000; Marsh & Hau, 2007), various "rules of thumb" have been established that are widely used with caution. These being, that samples of less than 100 participants are often deemed small, samples of between 100 to 200 participants considered a moderate size (and often suggested as the minimum for the application of SEM), while samples sizes of greater than 200 participants are often viewed as large and ideal for more complex statistical analysis (Kline, 2011; Marsh & Hau, 2007; Schumacker & Lomax, 2010). MacCallum and Austin (2000) suggest that the estimation of more complex models is not supported by smaller samples, and MacCallum, Browne, and Sugawara (1996) suggest that reasonable levels of statistical power are not possible without a large sample. Larger samples also have the added value of allowing latent variables to be constructed in SEM from observed variables, and given the large number of latent variables and the longitudinal nature of this study, the larger sample size is beneficial. Thus, SEM is more applicable for analysing larger samples than smaller samples, as smaller samples can suffer from insufficient information to estimate parameters when all paths are included in the model (saturated model) and when a large number of variables underlie the model (Schumacker & Lomax, 2010).

As a result, parameters may not be significant with small samples but can be significant with larger samples.

Statistical power also tends to increase with increases in the reliability of items (as a greater proportion of variance in the items is explained by their latent constructs) and in the number of items per construct (Tomarken & Waller, 2003, 2005). Hence, there is a need for researchers to use measures with high reliability and/or instruments with multiple indicators.

While increasing sample size is often the simplest way to increase the statistical power of a test, it may confound assessment of model fit in SEM as power increases the likelihood that the researcher will reject the null hypothesis (McCoach et al., 2007). This is because in SEM, the researcher is concerned about the degree to which the model fits the data, not whether the covariances between variables are large or small.

For these reasons, the current investigation aimed to improve statistical power by: (a) recruiting a large number of participants, (b) using reliable and well-established measures of academic and non-academic outcomes, (c) using higher-order factor analysis of the MES-HS to reduce 11 motivation factors to three motivation factors, consistent with Martin (2007), and (d) implementing item parcels in models. The first three have been addressed throughout this chapter. The item parcelling approach is now detailed.

4.4.3.4 Item parcelling.

Ongoing debate surrounds the appropriateness of using item parcels when estimating CFA and SEM models due to concerns about misspecification. A number of commentators are less concerned about the limitations of items parcels (e.g., Little, Cunningham, Shahar, & Widaman, 2002; Little, Rhemtulla, Gibson &

Schoemann, 2013), while others have criticised the use of item parcels as almost never appropriate in applied research (e.g., Marsh, Lüdtke, Nagengast, Morin, & Von Davier, 2013). One of the most extensive and recent demonstrations of item parcel limitations is that by Marsh et al. (2013) who argued that at a minimum, unidimensionality must be demonstrated to ensure there are no factors that limit the justification to parcel items (e.g., there must be few or no major cross-loadings). Given the concerns raised and potential limitations the current study sought to demonstrate the appropriateness of using item parcels due to the complexity of the longitudinal model under study if measured at the item level. In this instance, item parcels were seen as an appropriate way to reduce model complexity and the number of parameters estimated without losing information from items that may contribute to the meaning of a latent variable (Thompson & Melancon, 1996). Item parcelling was used in the SEM of attending boarding school, whereby each latent variable was represented by item parcels. This approach, when items are known to be unidimensional, appears to reduce the bias in structural parameters compared with using individual items (Bandalos, 2002).

Prior to parcelling, the dimensionality of factors was examined and found to be unidimensional based on initial CFA and reliability analysis (see Little et al., 2002). Due to the many multi-item factors relative to size of some of the sub-samples involved in analyses, latent factors were estimated after randomly assigning item parcels (see Little et al., 2002). Items were randomly allocated to two parcels for each factor with a view to having fewer parcels and a greater number of items per parcel as parcels with more items exhibit less skewness and kurtosis, higher reliability and validity, and improved model fit (Bandalos, 2002; Nasser & Takahashi, 2003). Once acceptable reliabilities and unidimensionality were

established, item parcels were generated by calculating the mean of item sets in a given subscale and these were used as factor indicators in the CFA.

In the context of the present study, where many factors are modelled across time, the use of item parcels is preferable to factor analysis on the full set of items because: (a) the ratio of participants to the number of observed variables is increased, (b) each factor should have a lower uniqueness component and thus be more reliable, and (c) the factor loadings are less affected by the idiosyncratic wording of particular items (Bandalos, 2002; Little et al., 2002; Marsh & O'Neill, 1984, Nasser & Takahashi, 2003). As described more fully in Results chapters, the CFA with item parcels yielded acceptable fit at both Times 1 and 2.

4.4.3.5 Measures of model fit.

A range of goodness-of-fit indices were assessed in evaluating the fit of the data to the proposed models in CFA and SEM. Goodness-of-fit can be assessed by comparing discrepancies between the hypothesised model and that of the sample data (variance-covariance matrix) or by comparing the fit of the hypothesised model (as specified by the factor structure) to a "null" model (no hypothesised factor structure). Models were considered to fit the data well if: (a) the solution was well defined and parameter estimates were acceptable, (b) parameter estimates were consistent with common sense, theory and *a priori* predictions, and (c) fit indices were acceptable when compared against alternative models (Marsh & Balla, 1994).

As a result of recommendations on establishing model fit (e.g., Hu & Bentler, 1995, 1998; MacCallum & Austin, 2000; MacCallum et al., 1996; Marsh, Balla, & McDonald, 1988; Marsh, Hau, & Wen, 2004), a number of goodness-of-fit measures were taken into account when assessing model fit: the CFI, the RMSEA, the chi-squared (χ^2) test statistic, and an evaluation of parameter estimates were used in the

present research to assess model fit (Bentler & Bonnett, 1980; Liem et al., 2012). The CFI compares the improvement of model fit of the hypothesised model with that of a less restricted baseline model, with indices ranging from 0 to 1 and values at or greater than .90 and .95 reflecting acceptable and excellent fit to the data respectively (Hu & Bentler, 1999; McDonald & Marsh, 1990). The CFI does not penalise lack of parsimony due to the introduction of additional parameters that may reflect capitalisation on chance, whereas the RMSEA contains penalties for lack of parsimony (Vandenberg & Lance, 2000; Yuan, 2005). The RMSEA index is less affected by sample size than the χ^2 test statistic, and values for RMSEA at or less than .08 and .05 are taken to reflect acceptable and excellent fit respectively (see Marsh, Balla, & Hau, 1996; Yuan, 2005). While χ^2 is often relied upon to assess model fit, in certain circumstances it is unreliable; for example, with small sample sizes the χ^2 test statistic has a tendency to indicate non-significant probability levels and as sample size increases, the χ^2 test statistic has a tendency to indicate a significant probability level, and is thus sensitive to sample size (Schumacker & Lomax, 2010).

4.4.3.6 Treatment of missing data.

It is to be expected in a longitudinal study of this size, with participants spanning 13 schools, some data will be missing. The current study surveyed students at Time 1 (Years 7 to 12) and also a year later, so it was to be expected that at Time 2 new students will have joined these schools (e.g., a new Year 7 cohort) but also the loss of some students who may have changed or left school (e.g., Year 12 cohorts graduating). To protect the integrity of the longitudinal sample, a large sample size was obtained at Time 1 so that it could be maintained at Time 2, taking into consideration normal attrition. Missing data is deemed problematic if the amount

exceeds 5% (Graham & Hoffer, 2000). In the current study the amount of missing data was less than 4% of the total data at Time 1 and less than 5% of the total data at Time 2. Various methods can be employed to treat missing data including mean substitution, pairwise deletion, or listwise deletion (Marsh & Hau, 2007). However, these traditional methods for handling missing data have a number of limitations, including biased parameter estimates and inaccurate standard errors and confidence intervals (Graham & Hoffer, 2000; Tomarken & Waller, 2005). As a result, the Expectation Maximisation (EM) algorithm approach to imputing missing data, using LISREL 8.80 (Joreskog & Sorbom, 2006), was implemented (Schafer & Graham, 2002) in the current study.

4.4.3.7 Modification indices.

A distinct feature of SEM is that it provides information relating to model modification aimed at enhancing the fit between the proposed model and empirical data (Kaplan, 1990a). While model fit can be evaluated by considering goodness-of-fit indices and parameter estimates, often there can be a number of competing or alternative models that are equally viable and that can potentially fit the data well (Kaplan, 1989; Kline, 2011; Martens & Haase, 2006; Quintana & Maxwell, 1999; Tomarken & Waller, 2005). Thus, SEM can provide an "exploratory" role in refining the model and improving model fit with the data (Kaplan, 1990a). Consequently, it is imperative to test other plausible models in order to improve model fit with the data, thereby achieving the most optimal outcome from both a theoretical and empirical perspective (Byrne, 2011; Kline, 2011; MacCallum & Austin, 2000; Quintana & Maxwell, 1999).

Model identification depends on the designation of parameters as fixed, free, or constrained (Schumacker & Lomax, 2010) and the most routinely utilised

techniques for assessing the inclusion of additional parameters is the modification index (MI) and the expected parameter change statistic (EPC). The MI is the expected value that χ^2 test statistic would decrease if a particular parameter were included in the model with higher MI values indicating parameters worth considering for inclusion (Kaplan, 1990a; Olsson, Troye, & Howell, 1999). The EPC is the approximate value of the new parameter if that specific parameter is to be freely estimated in a new model (Chou & Bentler, 1993; Kaplan, 1990a; Saris, Satorra, & Sörbom, 1987). Examination of the standardised residual matrix also provides an indication of which original covariances are not well accounted for by the model (Schumacker & Lomax, 2010). While there are a number of advantages of MI and EPC that may provide useful information regarding model fit, there are a number of limitations that mean that these should be used with caution when re-specifying the model (see Bollen, 1990; Hayduk, 1990; Kaplan, 1990b; Olsson et al., 1999; Stieger, 1990).

At Time 1 it was not necessary to take into consideration modification indices, as this was a “fully forward” model with all parameters from covariates and independent variables predicting dependent variables (see discussion in Chapter 5). However, modification indices were relevant for the matched dataset (Time 1—Time 2) in that they provided the potential to free additional parameters in the longitudinal model.

Theory building seeks to extend existing models based on a sound theoretical rationale as well as the addition of sound empirical evidence (Bollen, 1990; Kaplan, 1989, 1990a, 1990b). In accordance with recommendations outlined above (i.e., parameters with large modification indices and large expected change values), the current investigation utilised a model respecification approach which was a forward

search (see Chou & Bentler, 1993) in which both the MI and EPC are examined in order to determine which parameters fixed in the existing model could be successively freed and re-estimated. Further, this process of model respecification is founded on univariate procedures in which parameter estimates are systematically considered independent from one another (Byrne, 2011). It was also critical to free only those parameters having a practical significance, a substantive meaning, and those that were theoretically justifiable to do so (Schumacker & Lomax, 2010).

4.4.3.8 Adjusting for biased parameters due to multi-level structure.

Although the current investigation is not a multi-level one, it is evident that students are clustered within schools. This clustering can lead to mistakenly combining or bringing together units/levels of analysis and dependencies within groups and biased standard errors in results (see Goldstein, 2003; Hox, 2010; Raudenbush & Bryk, 2002). Taking this into consideration, CFA and SEM analyses implemented the M*plus* "complex" command to adjust for clustering within schools. This procedure does not bias tests of statistical significance as it provides adjusted standard errors (Muthén & Muthén, 1998–2012).

4.5 Chapter Summary

This chapter discussed the sample, instrumentation, procedure and statistical analyses conducted across Time 1, Time 2 and longitudinal phases of the research. A total of 5,198 students participated at Time 1, 5,276 at Time 2, and 2,002 students were matched across Time 1—Time 2 to form a longitudinal sample. All participants completed the same questionnaire comprising measures of academic and non-academic outcomes. Participants were also surveyed regarding relevant background and socio-demographic factors to assist in contextualising the study and to serve as covariates in analyses. Data analysis comprised the reliability and validity of

instrumentation. Testing of the cross-sectional and longitudinal hypothesised models against the data was also outlined. The following Results chapters present an overview of findings.

CHAPTER 5: TIME 1 CROSS-SECTIONAL RESULTS

5.1 Introduction

This chapter assesses two key aspects of data analysis: the psychometrics of instrumentation and the structural components of the hypothesised model. The former is conducted through an assessment of distributional properties of the data (i.e., skewness, kurtosis), internal consistency (i.e., reliability assessed by way of Cronbach's alpha) of item sets, analysis of day/boarding background characteristics, CFA to examine the underlying factor structure of the instrument, and multi-group tests of invariance to examine whether the scales are sound for a generalised sample. The latter aspect of data analysis is conducted through SEM to examine the hypothesised structural relationships between predictors and outcome variables. Findings in this chapter are based on Time 1 data (N = 5,198 students, Years 7 to 12 from 13 high schools across Australia) and are focused on research questions outlined in Chapter 3 considering the role of boarding school in academic and non-academic outcomes.

5.2 Time 1 Reliability Analysis and Basic Descriptive Statistics

The first set of analyses assessed the reliability and distributional properties of scales (15 independent variables and 19 dependent variables in the SEM). Despite evidence of one leptokurtic and positively skewed scale (absenteeism), evidence from skewness, kurtosis, and standard deviations generally suggested that scales were normally distributed (see Table 5.1). Curran, West, and Finch (1996) suggest that kurtosis values less than 7 and skewness values less than 2 can be accepted as within the cut-off for normal distribution. In the present study, no variable exceeded these criteria for skewness, except absenteeism, which was not surprising given that

such a variable is not expected to be normally distributed (Martin, 2009c) and many students would be expected to have very few absences.

Cronbach's alpha was used to test the internal consistency of item sets. Reliability coefficients were calculated for each of the academic and non-academic scales used in the Time 1 instrument and are reported in Table 5.1. All factors in the study displayed acceptable to excellent levels of reliability as measured by Cronbach's alpha (M = .83), ranging from .69 for parent education (a 2-item scale) to .93 for adaptive motivation. Overall, then, analysis of distributional properties and reliability coefficients indicated normally distributed data and reliable scales.

Table 5.1

Time 1 Descriptive Statistics, Cronbach's Alpha, and Factor Loadings for the Substantive Scales in the Study

	Time 1					
Scale	**Mean**	***SD***	**Skewness**	**Kurtosis**	**Cronbach's Alpha**	**CFA Loadings Range (Mean)**
				Motivation		
Adaptive Motivation	5.23	0.89	-0.50	0.14	.93	.68–.78 (.73)
Impeding Motivation	3.59	1.08	0.14	-0.31	.85	.56–.76 (.64)
Maladaptive Motivation	2.38	1.07	0.77	0.13	.84	.62–.82 (.72)
				Academic Buoyancy		
Buoyancy	4.56	1.26	-0.33	-0.16	.79	.83–.88 (.85)
				Student Approaches to Learning		
Competitive Learning	5.04	1.26	-0.51	-0.14	.81	.86–.87 (.86)
Cooperative Learning	5.11	1.11	-0.54	0.17	.81	.79–.91 (.85)
PBs	5.28	1.19	-0.53	-0.04	.90	.90–.92 (.91)
				Academic Engagement		
Enjoyment of School	5.50	1.37	-1.05	0.64	.91	.90–.92 (.91)
Educational Aspirations	5.90	1.08	-1.32	1.65	.79	.74–.87 (.80)
Class Participation	5.31	1.22	-0.65	0.10	.91	.89–.93 (.91)
Absenteeism*	3.38	5.30	4.43	31.19	–	1.00
Homework Completion*	4.23	0.78	-1.03	1.43	–	1.00
				Prior Academic Achievement		
Prior Achievement#	0.00	0.92	-0.50	0.35	.82	.83 (.83)
				Non-academic Outcomes		
Meaning and Purpose	4.86	1.33	-0.49	-0.14	.83	.76–.95 (.85)
Life Satisfaction	5.01	1.16	-0.54	0.06	.79	.73–.85 (.79)
Emotional Instability	3.82	1.34	0.13	-0.54	.81	.81–.88 (.85)
Extrcurricular Activity*	3.82	2.58	0.94	1.57	–	1.00
Peer Relationships	5.58	1.05	-1.03	1.22	.84	.82–.83 (.83)
Parent Relationships	5.77	1.23	-1.21	1.18	.85	.86–.89 (.87)
Teacher Relationships	5.21	1.18	-0.68	0.33	.87	.84–.90 (.87)
				Personality		
Agreeableness	5.54	.90	-0.86	1.24	.81	.80–.82 (.81)
Conscientiousness	4.71	1.12	-0.20	-0.30	.84	.79–.94 (.87)
Extraversion	4.95	1.08	-0.40	-0.21	.83	.82–.91 (.86)
Neuroticism	3.69	1.00	0.12	0.07	.75	.78–.81 (.79)
Openness	4.98	0.92	-0.31	0.02	.73	.62–.95 (.79)

Note. * single-item scales and thus reliability and factor loading ranges not available (factor loading is fixed to 1); # standardised by year-level

5.3 Background Characteristics of Day and Boarding Students

Prior to multivariate factor analyses and SEM, analysis of day/boarding student background characteristics was conducted. As demonstrated later, information derived here is important to help interpret any day/boarding school effects. At Time 1, there was no significant difference between day students and boarders based on gender. However, there was a significant difference in mean age, t (5,091) = 14.06, $p < .001$ and inspection of the means indicates that boarders tend to be older than day students in the Time 1 sample. For language background, there is a significant association with student type, χ^2 (1) = 20.57, $p < .001$ and it appears that boarding students are more likely to come from a NESB compared to day students. In terms of Indigenous cultural background, there is a significant association between Indigenous status and student type, whereby there are more Indigenous boarding students compared to Indigenous day students; χ^2 (1) = 212.81, $p < .001$. A significant difference was found in mean prior achievement and inspection of the means indicates that day students tend to be higher on prior academic achievement compared to boarders; t (5,127) = 12.01, $p < .001$. Tests comparing the means of parents'/guardians' education of day students and boarders show a significant association such that day students tended to have parents/guardians of higher education than boarders; t (4,906) = 17.06, $p < .001$. When a school-level factor (school structure) was compared for students it appears that in the Time 1 sample, a greater proportion of day students than boarders attended single-sex schools, whereas a greater proportion of boarders than day students attended co-educational schools; χ^2 (2) = 30.52, $p < .001$. There is also a significant role of boarding status in a number of personality factors, including agreeableness t (5,127) = 6.68, neuroticism t (5,127) = 17.06, and openness t (5,127) = 17.06, $p < .001$. Inspection of means indicates that

boarders are significantly lower in agreeableness and openness and significantly higher in neuroticism.

In comparison, inspection of Time 2 sample characteristics reveals significant difference in gender, χ^2 (1) = 23.65, $p < .001$, such that there were significantly greater percentage of girls as day students than boarders and similarly for boys with significantly greater percentage as day students than boarders. That is, that the proportion of day or boarding students who were male or female was significantly different. Again, there was a significant difference in mean age, t (5,143) = 10.04, $p < .001$ and inspection of the means indicates that boarders are on average older than day students in the Time 2 sample. Again for language background, there is a significant association with student type, χ^2 (1) = 9.90, $p < .01$ and it appears the sample comprises a greater proportion of boarding students with a NESB compared to day students with a NESB. Similarly, in terms of Indigenous cultural background, there is a significant association between Indigenous status and student type, whereby there are more Indigenous boarding students compared to Indigenous day students; χ^2 (1) = 256.63, $p < .001$. A significant difference was also found in mean prior achievement and inspection of the means indicates that day students tend to be higher on prior achievement compared to boarders; t (5,152) = 10.97, $p < .001$. Tests comparing the means of parents'/guardians' education of boarders and day students also show a significant association such that day students tended to have parents/guardians of higher education than boarders; t (4,803) = 9.89, $p < .001$. When school structure was considered, the Time 2 sample seems to comprise a greater proportion of day students attending single-sex girls' or co-educational schools, whereas a greater proportion of boarders attended single-sex boys' or co-educational schools; χ^2 (2) = 55.76, $p < .001$. That is, that the proportion of day or boarding

students attending single-sex or co-educational schools was significantly different. Again, significant association was found between boarding status and agreeableness t (5,152) = 6.03, extraversion t (5,152) = 3.62, neuroticism t (5,152) = 3.61, and openness t (5,152) = 8.13 (all at $p < .001$). Inspection of means indicates that boarders are significantly lower in agreeableness, extraversion, and openness but significantly higher in neuroticism again.

5.4 Time 1 Confirmatory Factor Analysis of the Instrumentation

The next stage of analyses tested whether multivariate measurement of the model supported a sound factor structure for academic and non-academic constructs. As described in Chapter 4, the underlying factor structure of the instrument was examined using CFA and robust maximum likelihood (MLR) estimation to demonstrate sound multidimensionality. The set of factors was represented by 12 academic factors and seven non-academic factors, yielding a 19-factor model. Items were freed to load on their respective factors and all other factor loadings were constrained to be zero. Goodness-of-fit indices were then used to assess how closely the hypothesised model represented the data.

When considering these CFA analyses, it was noted in Chapter 4 that although the present study is not intended as a multi-level one, it is the case that students are clustered within schools. When data are hierarchically structured in this way, there is a risk of erroneously conflating units/levels of analysis and ignoring dependencies within groups, resulting in biased standard errors in results (see Goldstein, 2003; Hox, 2010; Raudenbush & Bryk, 2002). Taking this into consideration, the present analyses adjusted for this clustering within schools by implementing the “complex” command in M*plus*. This procedure does not bias tests of statistical significance as it provides adjusted standard errors (Muthén & Muthén,

1998–2012). Also noted in Chapter 4 is the use of item parcels in analyses. Problems can occur when there are many parameters to estimate relative to sample size, leading to a lack of stability in parameter estimation (Holmes-Smith & Rowe, 1994). As discussed, when researchers are estimating complex models, a common approach is to create item parcels to reduce the ratio of estimated parameters to the sample size. Indeed, item parcels also generally result in more normally distributed variables (Bandalos, 2002).

CFA factor loadings are outlined in Table 5.1. The model provided a good fit to the data (χ^2 = 11,009, *df* = 1,279, RMSEA = .038, CFI = .90). The factor loadings indicated that the factors were well defined and robust. Essentially, all items loaded highly on the factors they were intended to measure (average absolute factor loading = .81) and hence support the proposed measurement model.

Taken together, preliminary descriptive and psychometric analyses indicate the instrumentation worked well. Specifically, standard deviations were proportional to scale means relative to prior research using these scales (e.g. for MES see Martin, 2007, 2009b), scales were approximately normally distributed, scales were reliable as indicated by Cronbach's alpha, and multidimensional measurement by way of CFA indicates good model fit and acceptable loadings.

5.4.1 Measurement invariance across key sub-groups.

Multi-group invariance testing is a strategy used to test whether the factor structure across groups in a sample is invariant and hence whether it is justifiable to pool data across these groups for whole-sample analysis (Marsh, 1993). To recap, invariance in factor structure can be best evaluated using CFA to determine whether and in what way the structure of constructs varies according to groups within the sample such as by gender or school year-level (see Byrne & Shavelson, 1987; Hattie,

1992; Marsh, 1993). Using CFA, this involves a successive set of steps, beginning with a baseline model that is least restrictive and in which no equality constraints are imposed, with subsequent tests for equivalence involving more stringent constraints for particular parameters. Goodness-of-fit indices are then used to determine whether factor structures are invariant across groups. Thus, Model 1 represents the baseline or unconstrained model, Model 2 constrains factor loadings, Model 3 constrains factor loadings and uniquenesses, Model 4 constrains factor loadings and factor correlations, and Model 5, the most stringent model tested, constrains factor loadings, uniquenesses, and factor correlations (see Appendix J, Table J.1).

The baseline model was compared to successive models to see whether changes in the CFI (as described by Cheung & Rensvold, 2002) and RMSEA (see Chen, 2007) meet the criteria of $\Delta CFI < .01$ and $\Delta RMSEA < .015$. It was proposed that should the factor structure be found to be invariant across student type, gender, school year-level, Aboriginality, and language background (see Chapter 4), then data could be pooled and modelled at the whole-sample level. Findings for each of these invariance analyses are reported in Appendix J, Table J.1. The minimum criterion for invariance is factor loadings, which are invariant across groups and the other criteria of uniquenesses and correlations being invariant are desirable (see Marsh, 1993). Consideration of the results against these criteria shows that the data are predominantly invariant across groups with minor departures on some residuals. The invariance across these groups provides support for the pooling of Time 1 data and analysing the hypothesised model at the whole-sample level. Described below, is invariance testing for each of the major groups in the sample based on student type, gender, school year-level, Aboriginality, and language background.

5.4.1.1 Student type.

The first set of multi-group CFAs examined the factor structure as a function of student type, establishing a baseline model that allowed all factor loadings, uniquenesses, and correlations/variances to be freely estimated and variant between the two sub-groups. This model yielded an acceptable fit to the data (χ^2 = 13,940, *df* = 1,669, RMSEA = .054, CFI = .92) and factor loadings are presented in Appendix J, Table J.1. Although these fit indices suggest that this model is a good fit to the data, it is important to test more stringent models. It was therefore necessary to examine the comparative fit indices for four additional models across day and boarding students as outlined in Models 2 to 5 above. Comparison of results between Models 1 and 5 shows slight variance, but nevertheless relative invariance across Models 1 to 4 when successive elements of the factor structure are held invariant for student type. As mentioned previously, the minimum criterion for invariance is factor loadings (see Marsh, 1993) and considering criteria for evidence of lack of invariance (see Chen, 2007; Cheung & Rensvold, 2002), the factor structure and key measurement parameters (uniquenesses, factor correlations/variances) were judged to be invariant for day and boarding students at Time 1.

5.4.1.2 Gender.

Similarly, multi-group CFAs were used to examine the factor structure as a function of gender. The baseline model yielded a good fit to the data (χ^2 = 13,246, *df* = 1,669, RMSEA = .052, CFI = .92) and these fit indices were again compared to four additional models (see Appendix J, Table J.1). Comparison of results across Models 1 to 4 indicate relative invariance when successive elements of the factor structure are held invariant for gender; however, slight variance between Model 1 and 5 was evident. Based on these comparisons, the minimum criterion of invariance

of factor loadings was met (see Marsh, 1993), and it appears there is relative invariance across all models (see Chen, 2007; Cheung & Rensvold, 2002) when subsequent parameters of the factor structure are held invariant across gender. This suggests that, at Time 1, the factor structure and key measurement parameters (uniquenesses, factor correlations/variances) were judged to be invariant for boys and girls.

5.4.1.3 School year-level.

In terms of school year-level (i.e., junior high or senior high school), the baseline model yielded a good fit to the data (χ^2 = 13,068, *df* = 1,669, RMSEA = .051, CFI = .92). Fit indices were again compared to four additional models (see Appendix J, Table J.1). Results indicate that when successive elements of the factor structure are held invariant across school year-level, the fit indices are comparable and indicate that there is relative invariance across Models 1 to 4 (see Chen, 2007; Cheung & Rensvold, 2002). Again, slight variance was evident between Model 1 and 5. Considering criteria for evidence of lack of invariance (see Chen, 2007; Cheung & Rensvold, 2002; Marsh, 1993), the factor structure and key measurement parameters (uniquenesses, factor correlations/variances) were deemed to be invariant for junior and senior high school groups.

5.4.1.4 Aboriginality (Indigenous status).

Although students of Indigenous cultural background comprised a relatively small sample in this study, it was deemed important to ascertain whether the factor structure was invariant for Aboriginality and thus whether it was feasible to group these students as part of the broader study and report outcomes of this group. Thus, multi-group CFAs were also used to examine the factor structure as a function of Aboriginality (i.e., Indigenous vs. non-Indigenous cultural background). The baseline

model yielded good fit to the data (χ^2 = 11,692, *df* = 1,669, RMSEA = .048, CFI = .93) and fit indices were again compared to four additional models (see Appendix J, Table J.1). Results indicate a slight variance between Models 1 and 2 and Models 1 and 5, but when successive elements of the factor structure are held invariant across Aboriginality, the fit indices are comparable and indicate that there is relative invariance across Models 2 to 5 (see Chen, 2007; Cheung & Rensvold, 2002; Marsh, 1993). This suggests, despite slight variance between Models 1 and 2 and Models 1 and 5, that the factor structure and key measurement parameters (uniquenesses, factor correlations/variances) were relatively invariant for Aboriginality at Time 1.

5.4.1.5 Language background.

Finally, multi-group CFAs were again employed in order to test for invariance as a function of language background (i.e., English speaking background vs. non-English speaking background). The baseline model yielded acceptable fit to the data (χ^2 = 14,619, *df* = 1,669, RMSEA = .055, CFI = .91). Fit indices were again compared to four additional models (see Appendix J, Table J.1) and indicate that the fit indices are comparable with relative invariance across all models (see Chen, 2007; Cheung & Rensvold, 2002). Thus, at Time 1, factor loadings, uniquenesses and factor correlations/variances are relatively invariant for students of English and NESBs.

Taken together, when disaggregating data as a function of day/boarding status, gender, school year-level, Aboriginality and language background, results show predominant invariance. As reflected in the ΔCFI > .01 between Models 1 and 2, some variance in factor loadings is evident for Aboriginality (although ΔRMSEA is acceptable). As Aboriginality is not the central substantive issue examined in this study, with Indigenous students comprising only 5% of the total sample (see Chapter

4), the relatively small sample size might have been a reason for the slight variance observed. Although other stringent tests of invariance (Models 2 to 5) suggest invariance of uniquenesses and factor correlations across Aboriginality, a larger sample is needed in future research to better test invariance for these students. Overall, these findings provide support for pooling data and analysing the hypothesised model at the whole-sample level (and not, for example, disaggregated as a function of gender, school year-level, or language background). Having now established the relative invariance across these groups at Time 1, the relationships in this hypothesised model are now the focus of analyses.

5.4.2 Correlations among factors.

Correlational analysis provides a first insight into relationships between student type and students' academic and non-academic outcomes. Correlations among factors are based on the whole-sample CFA described above and presented in Table 5.2. As the present study is centrally concerned with the relationship between student type (day/boarding status) and academic and non-academic outcomes, these correlations will be emphasised here—however, relationships among all factors that do not involve student type are readily available in Table 5.2.

When considering these correlations, it is again worth recalling from the CFA above that the present analyses adjusted for clustering of students within schools by implementing the "complex" command in M*plus*. This procedure provides adjusted standard errors and so does not bias tests of statistical significance (Muthén & Muthén, 1998–2012). Also to recall from Chapter 4 is the use of item parcels to create latent factors that are the basis of the correlation matrix. As discussed, when researchers are estimating complex models, a common approach is to create item parcels to reduce the ratio of estimated parameters to sample size.

Examination of the latent factor correlation matrix suggested that all factors were reasonably distinct (see Table 5.2). Also, correlations tended to be in the direction hypothesised in the proposed model. As seen in Table 5.2, student type (1 = day; 2 = boarding) is significantly correlated with the following dependent variables: impeding motivation (r = .15, p < .001), maladaptive motivation (r = .15, p < .01), educational aspirations (r = -.13, p < .01), and peer relationships (r = -.08, p < .01), as well as parent relationships (r = .06, p < .05), and teacher relationships (r = -.08, p < .05). Other noteworthy correlations that exist between student type and covariates and among academic, non-academic, and personality factors are shown in Table 5.2.

Importantly, however, the extent to which day/boarding status has a unique influence on students' academic and non-academic outcomes is best established through analyses that control for shared variance among factors and for the influence of hypothesised covariates. Then it is possible to ascertain unique variance attributable to day/boarding status. This was done through SEM where in the one analytic model, predictive parameters between day/boarding status and the outcome factors were modelled while controlling for shared variance with covariates and among the academic and non-academic outcome factors. These SEM analyses of Time 1 data are the focus of the remainder of this chapter.

Table 5.2

Time 1 CFA Factor Correlations for Academic and Non-Academic Outcomes

	Student Type (F1) (Day/Boarding)	**Gender (F2)** (FM/M)	**Age (F3)**	**Language Background (F4)** (ESB/NESB)	**Parent Education (F5)**	**Aboriginality (F6)** (Indig/non-Indig)	**Prior Achievement (F7)**	**Agreeableness (F8)**	**Conscientiousness (F9)**	**Extraversion (F10)**	**Neuroticism (F11)**	**Openness (F12)**	**Single-sex Female (F13)** (FM/Co-Ed)	**Single-sex Male (F14)** (M/Co-Ed)	**School Achievement (F15)**	**Adaptive Motivation (F16)**	**Impeding Motivation (F17)**	**Maladaptive Motivation (F18)**	**Academic Buoyancy (F19)**	**Enjoyment of School (F20)**	**Educational Aspirations (F21)**	**Class Participation (F22)**	**Competitive Learning (F23)**	**Cooperative Learning (F24)**	**Personal Best Goals (F25)**	**Homework Completion (F26)**	**Absenteeism (F27)**	**Meaning, & Purpose (F28)**	**Life Satisfaction (F29)**	**Emotional Instability (F30)**	**Peer Relationships (F31)**	**Parent Relationships (F32)**	**Teacher Relationships (F33)**	**Extracurricular Activities (F34)**
F1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F2	-01	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F3	**19**	00	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F4	06	03	02	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F5	**-30**	10	*-07*	02	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F6	*-20*	06	01	-09	24	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F7	**-19**	06	-04	00	**31**	21	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F8	-10	**-21**	-11	-06	07	10	**17**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F9	-02	-06	**-11**	-01	03	*04*	**20**	**44**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F10	00	*-08*	**-07**	**-15**	00	04	02	**21**	03	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F11	05	**-13**	**16**	**09**	00	-02	-04	**-20**	**-11**	**-24**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F12	**-13**	-02	**-10**	-01	**20**	*08*	**43**	**39**	**29**	**17**	*-07*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F13	-03	-48	-01	06	06	06	05	13	03	03	*08*	04	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F14	-06	**56**	-06	05	*21*	*13*	14	-03	08	-02	*-06*	09	*-27*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F15	*-20*	06	03	09	**37**	*36*	**25**	*11*	05	02	-02	10	29	36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F16	-04	-07	**-15**	05	**13**	-01	**33**	**43**	**55**	05	*-03*	**37**	*09*	09	08	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F17	**15**	**-13**	**10**	*05*	**-14**	*-12*	**-28**	**-18**	**-24**	**-13**	**58**	**-24**	03	**-12**	*-11*	*-08*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F18	15	04	**22**	04	**-18**	-16	**-30**	**-48**	**-53**	**-13**	**21**	**-34**	-08	-12	-19	**-71**	**50**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F19	-02	**14**	**-16**	-01	04	-01	**17**	**18**	**28**	**14**	**-54**	**23**	-07	**12**	02	**37**	**-65**	**-32**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F20	-07	-01	**-20**	-01	**13**	00	**21**	**38**	**33**	**13**	**-16**	**26**	02	**11**	*11*	**62**	**-21**	**-62**	**42**	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F21	-13	-08	-05	01	**23**	*04*	**40**	**43**	**38**	**07**	-05	**38**	*09*	08	**16**	**77**	**-17**	**-73**	**33**	**76**	–	–	–	–	–	–	–	–	–	–	–	–	–
F22	-04	-04	**-16**	*-07*	**09**	03	**22**	**38**	**33**	**36**	**-13**	**33**	07	07	06	**62**	**-19**	**-54**	**39**	**62**	**63**	–	–	–	–	–	–	–	–	–	–	–	–
F23	-04	**16**	**07**	**08**	**18**	07	**35**	**09**	**18**	05	**18**	**27**	-01	**20**	**16**	**45**	*09*	**-23**	**13**	**30**	**44**	**33**	–	–	–	–	–	–	–	–	–	–	–
F24	-03	*-06*	**-18**	-01	02	-02	02	**39**	**15**	**22**	**-15**	**14**	05	00	03	**40**	01	**-29**	**28**	**43**	**39**	**51**	**21**	–		–	–	–	–	–	–	–	–
F25	-02	-06	**-19**	04	04	-04	**21**	**37**	**48**	**08**	-06	**28**	05	06	03	**85**	*-07*	**-63**	**38**	**56**	**66**	**58**	**40**	**42**	–	–	–	–	–	–	–	–	–
F26	-07	-10	**-22**	02	09	08	**25**	**29**	**46**	-02	-03	**21**	10	*09*	10	**51**	-12	**-52**	**18**	**33**	**40**	**31**	**20**	**18**	**45**	–	–	–	–	–	–	–	–
F27	05	-03	04	-04	**-10**	-12	**-09**	**-04**	**-08**	02	02	*-04*	-04	-08	-11	**-08**	*05*	**13**	-06	**-09**	**-10**	*-05*	**-07**	*-03*	-06	**-11**	–	–	–	–	–	–	–
F28	03	00	**-10**	02	02	01	**13**	**35**	**34**	**16**	**-15**	**27**	03	07	02	**53**	**-15**	**-40**	**34**	**45**	**41**	**42**	**26**	**37**	**49**	**23**	**-04**	–	–	–	–	–	–
F29	-04	00	**-16**	*-08*	**08**	*04*	**21**	**42**	**38**	**20**	**-30**	**26**	02	08	04	**57**	**-27**	**-54**	**45**	**62**	**53**	**51**	**25**	**39**	**52**	**31**	**-07**	**70**	–	–	–	–	–
F30	04	**-15**	**10**	**10**	-03	-06	-07	**-10**	**-10**	**-30**	**77**	**-09**	*08*	-08	-03	02	**75**	**24**	**-55**	**-15**	*-04*	**-14**	09	*-05*	-02	-02	03	**-08**	**-24**	–	–	–	–
F31	-08	**-13**	-08	*-09*	09	05	**21**	**46**	**29**	**34**	**-23**	**23**	11	-03	07	**50**	**-20**	**-46**	**38**	**66**	**59**	**59**	**25**	**54**	**49**	**25**	-04	**43**	**57**	**-21**	–	–	–
F32	*06*	01	**-15**	-04	04	02	**10**	**40**	**35**	**09**	**-18**	**19**	02	07	*06*	**52**	**-18**	**-52**	**32**	**50**	**47**	**42**	**19**	**32**	**48**	**30**	**-05**	**54**	**76**	**-16**	**42**	–	–	–
F33	*-08*	00	**-09**	00	**13**	02	**24**	**40**	**39**	05	**-09**	**31**	*07*	**10**	09	**69**	**-23**	**-55**	**46**	**74**	**70**	**63**	**34**	**39**	**60**	**35**	**-09**	**45**	**57**	**-09**	**53**	**49**	–	–
F34	03	00	*11*	*-06*	**11**	*12*	**24**	**12**	**15**	**15**	03	**18**	03	12	*11*	**17**	-02	**-14**	03	**11**	**15**	**21**	**16**	06	**13**	**13**	*-04*	**14**	**11**	01	**14**	**07**	**12**	–

Note. Decimal point omitted. *r* values significant at $p < .001$ are indicated in **bold**, $p < .01$ underlined, and $p < .05$ in *italics*.

5.5 Assessment of the Hypothesised Time 1 Structural Model

Because correlations do not control for shared variance with other factors, the unique role of student type (day/boarding status) in outcomes cannot be established. It is therefore important to conduct multivariate analyses that are designed to ascertain the unique variance attributable to student type. SEM is an approach suitable for this purpose. In the one analytic model, predictive parameters between student type and outcome factors are modelled while controlling for shared variance among socio-demographic, prior achievement, personality, and school-level covariates and the academic and non-academic outcome factors. The present study conducted analyses in five steps (akin to hierarchical multiple regression). Step 1 included student type as the sole predictor of outcomes. This was included as the initial step as it was of central interest to examine how its role is systematically influenced as subsequent predictors are entered into the model. This provides useful guidance as to factors that operate alongside student type to affect its relationship with academic and non-academic outcomes. Step 2 included the socio-demographic covariates, Step 3 added prior achievement, Step 4 added personality, and Step 5 added school-level factors to the hierarchy of modelling to ascertain change in explained variance and standardised beta (β) parameters for day/boarding status as a function of including school factors.

The central predictive factor was student type (day = 1; boarding = 2). The outcome factors comprised three motivation factors (adaptive motivation, impeding motivation, maladaptive motivation), one academic buoyancy factor, three SAL factors (competitive learning, cooperative learning, PBs), five academic engagement factors (homework completion, absenteeism, enjoyment of school, educational aspirations, class participation), three well-being factors (life satisfaction, meaning

and purpose, emotional stability), an ECA frequency factor, and three interpersonal relationship factors (peers, parents, teachers). Six socio-demographic factors (gender, age, language background, parents'/guardians' education, Indigenous cultural background), a prior achievement factor, five personality factors (agreeableness, conscientiousness, extraversion, neuroticism, openness), and three school-level factors (single-sex female, single-sex male, school-average achievement) were included as covariates. SEM was conducted in M*plus* to test the proposed model. The ordering of this model was such that day/boarding status predicted academic and non-academic outcomes, controlling for the effects of socio-demographics, personality, prior achievement, and school-level variables. The full hypothesised model is presented in Figure 4.1. In line with earlier analyses, this SEM was based on item parcels and the hierarchical clustering of students within schools is accounted through the "complex" command in M*plus*.

5.5.1 Step 1: Student type (day/boarding status).

In the first step of the hierarchical model, only *student type* (day/boarding status) is included as the predictor of academic and non-academic outcomes. By juxtaposing this step with Steps 2 to 5 that include covariates, it is possible to better disentangle the role of student type from effects due to socio-demographic, prior achievement, personality, and school factors. This SEM yielded an acceptable fit to the data (χ^2 = 6,527, *df* = 593, RMSEA = .044, CFI = .94). The relative salience of effects can be assessed by considering standardised beta coefficients (β). There are various approaches to assessing effect sizes (e.g., Cohen, 1988; Hattie, 2009), but as the present study used SEM methodology rather than experimentation, an alternative way of thinking about the magnitude of relations between educational predictors and outcome variables was required. Based on experience across a range of educational

research studies, Keith (2006) proposes tentative benchmarks for judging the magnitude of effects on educational outcomes such that standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (for further information see Keith, 1999). These recommendations can be used to assess the magnitude and relevance of standardised beta coefficients (β).

In terms of academic measures, boarders scored higher than day students on impeding motivation (β = .14, $p < .001$) and maladaptive motivation (β = .15, $p < .01$) but lower than day students on educational aspirations (β = -.13, $p < .01$). On the non-academic measures, boarders scored higher than day students on parent relationships (β = .06, $p < .05$) but lower on peer relationships (β = -.08, $p < .01$) and teacher relationships (β = -.08, $p < .05$). However, there were no significant differences found between day and boarding students on 13 of 19 academic and non-academic outcomes. On all three SAL measures, on four out of five academic engagement measures, and on four of the seven non-academic measures, day students and boarders were not significantly different. Tables 5.3 and 5.4 outline all standardised beta coefficients for outcomes measured in Steps 2 to 4 of the hierarchical model while Tables 5.5 and 5.6 and Figure 5.1 outline standardised beta coefficients for the full empirical structural model, which includes Step 5.

Table 5.3

Time 1 Standardised Beta Coefficients (β) for Academic Outcomes in Each Step of the Hierarchical Model

	Adaptive Motivation	Impeding Motivation	Maladaptive Motivation	Academic Buoyancy	Competitive Learning	Cooperative Learning	Personal Bests	Homework Completion	Absenteeism	Enjoyment of School	Educational Aspirations	Class Participation
	β (R^2)	**β (R^2)**	**β (R^2)**	**β (R^2)**	**β (R^2)**	**β (R^2)**	**β (R^2)**	**β (R^2)**	**β (R^2)**	**β (R^2)**	**β (R^2)**	**β (R^2)**
STEP 1												
Student Type (1=Day/2=Boarding)	-.04 (.01)	.14*** (.02*)	.15** (.02)	-.01 (.01)	-.04 (.01)	-.03 (.01)	-.02 (.01)	-.07 (.01)	.05 (.01)	-.07 (.01)	-.13** (.02)	-.04 (.01)
STEP 2												
Student Type (1=Day/2=Boarding) **(+ socio-demographics)**	.02 (.04***)	.09*** (.06***)	.05 (.10***)	.03 (.05***)	.01 (.06***)	.01 (.04**)	.02 (.04***)	.01 (.07***)	-.01 (.02***)	-.01 (.05***)	-.07 (.07***)	.02 (.04***)
STEP 3												
Student Type (1=Day/2=Boarding) **(+ socio-demographic, prior achievement)**	.05 (.15***)	.07** (.11***)	.03 (.15***)	.04* (.08***)	.03 (.16***)	.01 (.04**)	.05 (.09***)	.03 (.12***)	-.01 (.03***)	.02 (.09***)	-.03 (.18***)	.04 (.08***)
STEP 4												
Student Type (1=Day/2=Boarding) **(+ socio-demographic, prior achievement, personality)**	.04 (.42***)	.07** (.44***)	.03 (.43***)	.04* (.38***)	.03 (.24***)	.02 (.20***)	.04 (.31***)	.02 (.28***)	-.01 (.03***)	.02 (.23***)	-.03 (.35***)	.03 (.31***)
STEP 5												
Student Type (1=Day/2=Boarding) **(+ socio-demographic, prior achievement, personality, school factors)**	.04 (.43***)	.07** (.44***)	.03 (.44***)	.04* (.38***)	.03 (.25***)	.02 (.20***)	.04 (.31***)	.02 (.29***)	-.01 (.03***)	.02 (.24***)	-.03 (.35***)	.03 (.31***)

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006).

Table 5.4

Time 1 Standardised Beta Coefficients (β) for Non-academic Outcomes in Each Step of the Hierarchical Model

	Meaning & Purpose	**Life Satisfaction**	**Emotional Instability**	**Extracurricular Activities**	**Peer Relationships**	**Parent Relationships**	**Teacher Relationships**
	β ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***
STEP 1							
Student Type (1=Day/2=Boarding)	.03 (.01)	-.04 (.01)	.04 (.01)	.03 (.01)	-.08** (.01)	.06* (.01)	-.08* (.01)
STEP 2							
Student Type (1=Day/2=Boarding) **(+ socio-demographics)**	.06* (.01**)	.02 (.04***)	.01 (.05***)	.07* (.04*)	-.04 (.04***)	.12*** (.04***)	-.03 (.02*)
STEP 3							
Student Type (1=Day/2=Boarding) **(+ socio-demographic, prior achievement)**	.07** (.03***)	.04 (.07***)	.01 (.05***)	.09** (.09**)	-.02 (.08***)	.13*** (.05***)	-.01 (.07***)
STEP 4							
Student Type (1=Day/2=Boarding) **(+ socio-demographic, prior achievement, personality)**	.07*** (.20***)	.04* (.30***)	.01 (.63***)	.08* (.13***)	-.02 (.32***)	.14*** (.24***)	-.01 (.25***)
STEP 5							
Student Type (1=Day/2=Boarding) **(+ socio-demographic, prior achievement, personality, school factors)**	.07** (.20***)	.04* (.30***)	.01 (.63***)	.08** (.14***)	-.02 (.32***)	.14*** (.24***)	-.01 (.26***)

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006).

5.5.2 Step 2: Student type after controlling for socio-demographic factors.

The next step in hierarchical analyses involved the inclusion of the *socio-demographic* covariate factors. Of key interest here is the role of student type once these are included in the modelling. This SEM yielded an acceptable fit to the data (χ^2 = 7,619, *df* = 742, RMSEA = .042, CFI = .93). In terms of academic measures, boarders only scored higher than day students on impeding motivation (β = .09, p < .001). On the non-academic measures, boarders scored higher than day students on meaning and purpose (β = .06, p < .05), participation in ECAs (β = .07, p < .05), and parent relationships (β = .12, p < .001). However, there were no significant differences found between day and boarding students on 15 of 19 academic and non-academic outcomes. On all three SAL measures, all five academic engagement measures, and on four of the seven non-academic measures, day students and boarders were not significantly different.

5.5.3 Step 3: Student type after controlling for socio-demographic and prior achievement factors.

The following step (Step 3) in the hierarchical analyses controlled for socio-demographic and *prior achievement* factors, thus allowing the role of student type to be tested once moderated by the inclusion of these covariates. This SEM yielded an acceptable fit to the data (χ^2 = 8,263, *df* = 810, RMSEA = .042, CFI = .93). In terms of academic measures, boarders scored higher than day students on impeding motivation (β = .07, p < .01) and academic buoyancy (β = .04, p < .05). On the non-academic measures, boarders scored higher than day students on meaning and purpose (β = .07, p < .01), participation in ECAs (β = .09, p < .01), and parent relationships (β = .13, p < .001). However, there were no significant differences

found between day and boarding students on 14 of 19 academic and non-academic outcomes. On all of the SAL and academic engagement measures, and on four of the seven non-academic measures, day students and boarders were not significantly different once prior achievement was included in the model along with socio-demographic factors.

5.5.4 Step 4: Student type after controlling for socio-demographic, prior achievement, and personality factors.

The fourth step in the hierarchical analyses controlled for socio-demographic, prior achievement, and *personality* factors, enabling the role of student type to be assessed once moderated by the inclusion of these three covariate sets. The SEM for this analysis yielded an acceptable fit to the data (χ^2 = 10,686, *df* = 1,195, RMSEA = .039, CFI = .93). In terms of academic measures, boarders scored higher than day students on impeding motivation (β = .07, $p < .01$) as well as scoring higher on academic buoyancy (β = .04, $p < .05$). On the non-academic measures, boarders scored higher than day students on meaning and purpose (β = .07, $p < .001$), life satisfaction (β = .04, $p < .05$), participation in ECAs (β = .08, $p < .05$), and parent relationships (β = .14, $p < .001$). However, there were no significant differences found between day and boarding students on 13 of 19 academic and non-academic outcomes. On all SAL and academic engagement measures, and on three of the seven non-academic measures, day students and boarders were not significantly different after controlling for socio-demographic, prior achievement, and personality factors.

5.5.5 Step 5: Student type after controlling for socio-demographic, prior achievement, personality, and school-level factors.

The final step in the hierarchical analyses represents the full, empirical structural model and controlled for socio-demographic, prior achievement,

personality and *school-level* factors. This SEM yielded an acceptable fit to the data (χ^2 = 11,010, *df* = 1,279, RMSEA = .038, CFI = .90). In terms of academic measures, boarders scored higher than day students on impeding motivation (β = .07, $p < .01$) as well as scoring higher on academic buoyancy (β = .04, $p < .05$). On the non-academic measures, boarders again scored higher than day students on meaning and purpose (β = .07, $p < .01$), life satisfaction (β = .04, $p < .05$), participation in ECAs (β = .08, $p < .01$), and parent relationships (β = .14, $p < .001$). However, there were no significant differences found between day and boarding students on 13 of 19 academic and non-academic outcomes. Again, on all SAL and academic engagement measures, and on three of the seven non-academic measures, day and boarding students were not significantly different once the moderating effects of socio-demographic, prior achievement, personality, and school-level factors were taken into account. Tables 5.5 and 5.6 and Figure 5.1 outline standardised beta coefficients for the full empirical structural model, including Step 5.

Table 5.5

Final (Step 5) Time 1 Standardised Beta Coefficients (β) for Academic Outcomes in the Empirical Structural Model

	Adaptive Motivation	Impeding Motivation	Maladaptive Motivation	Academic Buoyancy	Competitive Learning	Cooperative Learning	Personal Bests	Homework Completion	Absenteeism	Enjoyment of School	Educational Aspirations	Class Participation
FULL MODEL	**β**	**β**	**B**	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**
Student Type (1=Day/2=Boarding)	.04	.07**	.03	.04*	.03	.02	.04	.02	-.01	.02	-.03	.03
Gender (1=FM/2=M)	-.01	-.04*	.02	.06*	.17***	.03	.01	-.11***	-.01	.01	-.04	.04
Age	-.08**	-.03	.12***	-.06***	.07***	-.13***	-.13***	-.18***	.03	-.14***	.02	-.09***
Language Background (1=ESB/2=NESB)	.04**	.01	.02	.03**	.06*	.03	.05**	.02	-.04*	-.01	.01	-.02
Parent Education	.05**	-.04*	-.05**	-.01	.05***	.01	-.01	.01	-.05	.06**	.11***	.03
Aboriginality (1=Indig/2=non-Indig)	-.08	-.04*	-.05**	-.04	-.02	-.05*	-.08*	.03	-.09**	-.09	-.09**	-.04
Prior Achievement	.19***	-.16***	-.11***	.08***	.25***	-.03	.11***	.15***	-.03	.10***	.25***	.11***
Personality												
Agreeableness	.20***	.06	-.22***	-.05	.03	.38***	.18***	.09**	.01	.25***	.26***	.19***
Conscientiousness	.39***	-.14***	-.36***	.20***	.11***	-.03	.36***	.36***	-.06**	.17***	.18***	.18***
Extraversion	-.01	.02	-.03	.01	.10***	.14***	.03	-.06**	.02	.04	-.01	.30***
Neuroticism	.07**	.56***	.09***	-.50***	.25***	-.02	.04	.04*	.02	-.05**	.04**	.03
Openness	.10***	-.10***	-.05**	.13***	.12***	-.02	.05**	-.01	.01	.04	.10***	.10***
School factors												
Single-sex Female (1=FM/2=Co-Ed)	.05	-.03	-.01	-.01	.03	.02	.03	.04	-.04	-.02	.02	.06*
Single-sex Male (1=M/2=Co-Ed)	.06	-.02	-.04	.02	.06**	.01	.03	.10*	-.05	.06*	.04	.05
School Achievement	-.04	.01	-.06**	-.02	.03*	.01	-.03	-.01	-.02	.05	.02	-.04
FULL MODEL ***(R^2)***	(.43***)	(.44***)	(.44***)	(.38***)	(.25***)	(.20***)	(.31***)	(.29***)	(.03***)	(.24***)	(.35***)	(.31***)

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006); FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational.

Table 5.6

Final (Step 5) Time 1 Standardised Beta Coefficients (β) for Non-academic Outcomes in the Empirical Structural Model

	Meaning & Purpose	Life Satisfaction	Emotional Instability	Extracurricular Activities	Peer Relationships	Parent Relationships	Teacher Relationships
FULL MODEL	**β**	**β**	**β**	**β**	**β**	**β**	**β**
Student Type (1=Day/2=Boarding)	.07**	.04*	.01	.08**	-.02	.14***	-.01
Gender (1=FM/2=M)	.06*	.03	-.05**	-.06*	-.02	.07***	.06**
Age	-.04**	-.07***	-.03**	.13**	.01	-.10***	-.02
Language Background (1=ESB/2=NESB)	.04***	-.04*	.02*	-.05	-.03	-.03	.01
Parent Education	-.02	.04*	-.01	.05*	.04	.03	.05*
Aboriginality (1=Indig/2=non-Indig)	-.02	-.02	-.03*	.07	-.04*	-.01	-.05
Prior Achievement	.02	.10***	-.02	.18***	.14***	.01	.09***
Personality							
Agreeableness	.21***	.24***	.12**	.02	.33***	.31***	.26***
Conscientiousness	.20***	.21***	-.05***	.10***	.11***	.20***	.22***
Extraversion	.09***	.08**	-.13***	.14***	.24***	-.01	-.02
Neuroticism	-.05***	-.19***	.75***	.07**	-.10***	-.07***	-.01
Openness	.11***	.03*	-.04	.04**	-.04*	.01	.10***
School factors							
Single-sex Female (1=FM/2=Co-Ed)	.04*	.03	-.01	.02	.05**	.01	.08*
Single-sex Male (1=M/2=Co-Ed)	.04	.04	.01	.13**	-.02	.02	.07*
School Achievement	-.03	-.05	.01	-.02	-.01	.02	-.04
FULL MODEL ***(R^2)***	(.20***)	(.30***)	(.63***)	(.14***)	(.32***)	(.24***)	(.26***)

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006); FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational.

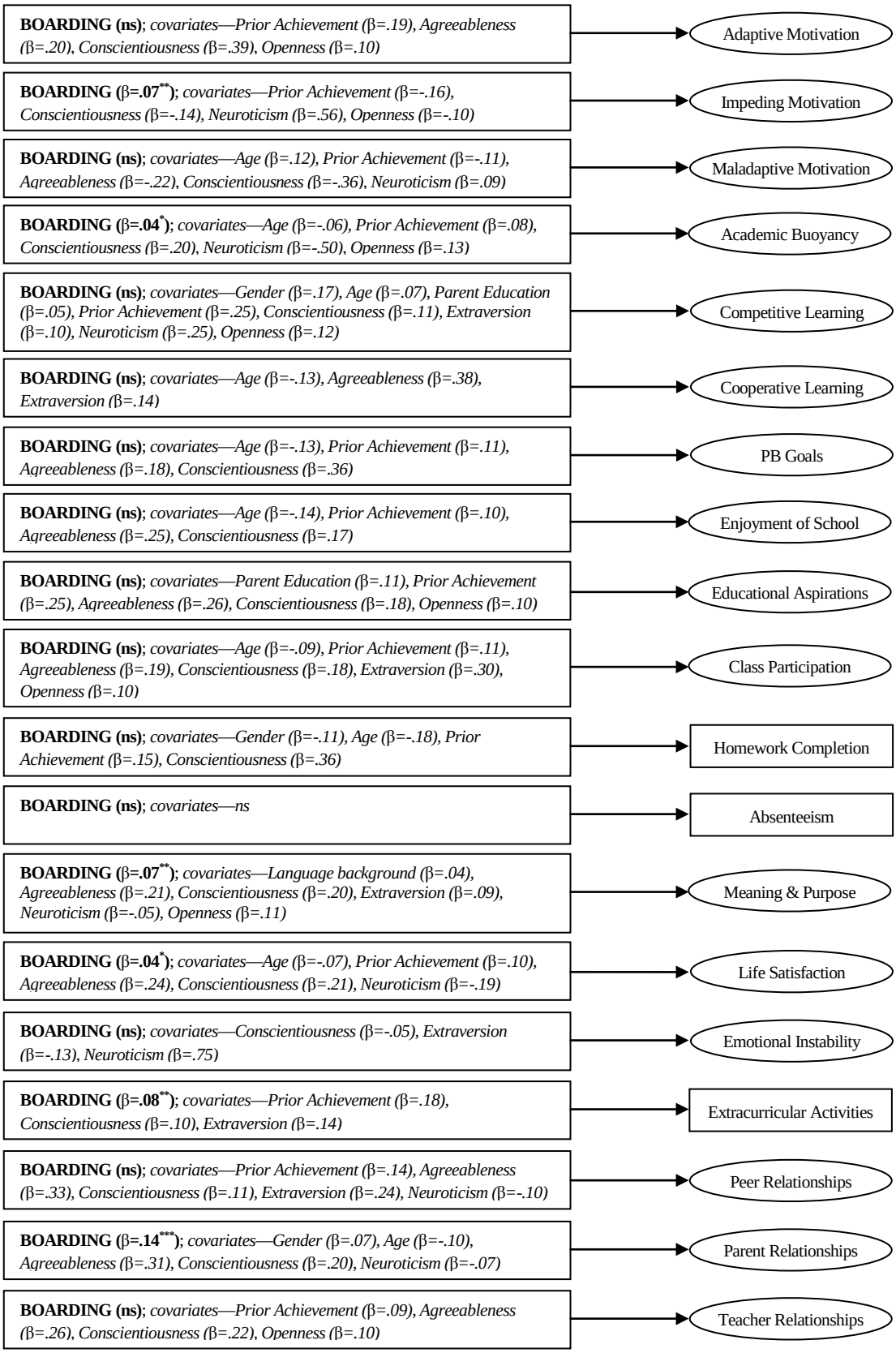

Figure 5.1. Final (Step 5) Time 1 empirical structural model (standardised parameter estimates, β) for academic and non-academic outcomes. Fit: CFI = .90, RMSEA = .038. All paths reported for covariates are significant at $p < .001$.

5.5.6 Interactions.

The main focus of this chapter has been to analyse the role of day/boarding status, socio-demographic, personality, and school-level factors as main effects on academic and non-academic outcomes. In addition to this primary analysis of main effects, a supplementary analysis considering the interactions between student type (day/boarding status) and each of the socio-demographic, prior achievement, personality, and school-level factors (resulting in 266 interaction terms, e.g., student type × gender, student type × age, student type × parent education, student type × language background, student type × Aboriginality, student type × school structure, student type × agreeableness, etc.) were also examined.

Due to the large number of predictors now estimated in the model (15 main effects and 266 interaction effects) and to avoid capitalising on chance, a more conservative significance value was set at $p < .001$ for exploring interaction effects. Of the 266 interaction effects examined, only two yielded statistical significance. For meaning and purpose, one interaction was significant; that being student type × language background ($\beta = .03$, $p < .001$, such that NESB students who were boarders reported higher meaning and purpose). For life satisfaction, one interaction was also significant; that of student type × school structure ($\beta = -.05$, $p < .001$; such that day students attending single-sex boys' schools reported higher life satisfaction). Taking these into consideration highlights the contribution of the main effects of student type, socio-demographic, personality, and school-level factors on academic and non-academic outcomes outlined above in explaining a greater amount of variance than those of the few significant interactions.

5.5.7 Follow-up analysis: Identifying influential covariate sets.

In order to consider which covariate set(s) were uniquely influencing the role of student type (day/boarding status) more or less than others, further analysis using SEM was conducted controlling separately for student type and socio-demographics, student type and prior achievement, and student type and personality. That is, separate SEMs were conducted in which student type (day/boarding status) was entered alongside just one covariate factor set in each SEM (e.g., student type + socio-demographics only; or, student type + personality only). Alongside the hierarchical SEMs and the interaction analyses, this was aimed at gaining further insight into what covariates were influential in affecting the size and direction of student type effects on outcomes. Tables 5.7 and 5.8 provide further information on the contribution of these covariates on standardised β coefficients for outcomes measured.

The first examined was the role of student type after controlling for socio-demographic factors. The results of this analysis reveal a change in effects for impeding motivation (β = .09, $p < .001$), meaning and purpose (β = .06, $p < .05$), participation in ECAs (β = .07, $p < .05$), and parent relationships (β = .12, $p < .001$) due to the inclusion of socio-demographic factors alongside student type. Subsequent analysis of the role of student type, after the sole inclusion of prior achievement as a covariate was then examined. The results of this analysis reveal a significant change in impeding motivation, (β = .10, $p < .001$), maladaptive motivation (β = .10, $p < .05$), and parent relationships (β = .08, $p < .01$) due to the inclusion of prior achievement alongside student type. Finally, the unique contribution of personality factors along with student type was examined. The results of this analysis reveal a significant change in impeding motivation (β = .10, $p < .001$), maladaptive

motivation ($\beta = .10$, $p < .01$), educational aspirations ($\beta = -.07$, $p < .05$), meaning and purpose ($\beta = .07$, $p < .05$), and parent relationships ($\beta = .10$, $p < .001$) due to the inclusion of personality alongside student type.

Taken together, these analyses highlight the change in student type effects once covariates are taken into consideration. It appears that it is the variance in outcomes as a result of these covariate factors, over and above differences due to day/boarding status, which is important. That is, many differences between day and boarding students' outcomes can be mostly accounted for by these covariates. Notwithstanding this, the overall pattern of results indicates that the outcomes of day students and boarders are quite similar after controlling for the numerous covariates outlined above.

Table 5.7

Time 1 Standardised Beta Coefficients (β) for Academic Outcomes due to Student Type Alongside Each Separately Modelled Covariate

	Adaptive Motivation	Impeding Motivation	Maladaptive Motivation	Academic Buoyancy	Competitive Learning	Cooperative Learning	Personal Bests	Homework Completion	Absenteeism	Enjoyment of School	Educational Aspirations	Class Participation
	β ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***
Student Type (1=Day/2=Boarding)	-.04 (.01)	.14*** (.02*)	.15** (.02)	-.01 (.01)	-.04 (.01)	-.03 (.01)	-.02 (.01)	-.07 (.01)	.05 (.01)	-.07 (.01)	-.13** (.02)	-.04 (.01)
+ Socio-demographics	.02 (.04***)	.09*** (.06***)	.05 (.10***)	.03 (.05***)	.01 (.06***)	.01 (.04**)	.02 (.04***)	.01 (.07***)	-.01 (.02***)	-.01 (.05***)	-.07 (.07***)	.02 (.04***)
+ Prior Achievement	.02 (.11***)	.10*** (.09***)	.10* (.10***)	.02 (.03***)	.03 (.12***)	-.02 (.01)	.03 (.05***)	-.02 (.06***)	.03 (.01*)	-.03 (.04***)	-.06 (.15***)	.01 (.05***)
+ Personality	.01 (.38***)	.10*** (.41***)	.10** (.39***)	.03 (.37***)	-.01 (.13***)	.01 (.17***)	.02 (.28***)	-.04 (.23***)	.04 (.01***)	-.03 (.20***)	-.07* (.27***)	-.01 (.29***)
FULL MODEL												
Student Type	.04	.07**	.03	.04*	.03	.02	.04	.02	-.01	.02	-.03	.03
+ All Factors												
(R^2)	(.43***)	(.44***)	(.44***)	(.38***)	(.25***)	(.20***)	(.31***)	(.29***)	(.03***)	(.24***)	(.35***)	(.31***)

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006); FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational.

Table 5.8

Time 1 Standardised Beta Coefficients (β) for Non-academic Outcomes due to Student Type Alongside Each Separately Modelled Covariate

	Meaning & Purpose	**Life Satisfaction**	**Emotional Instability**	**Extracurricular Activities**	**Peer Relationships**	**Parent Relationships**	**Teacher Relationships**
	β ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***
Student Type (1=Day/2=Boarding)	.03 (.01)	-.04 (.01)	.04 (.01)	.03 (.01)	-.08** (.01)	.06* (.01)	-.08* (.01)
+ Socio-demographics	.06* (.01**)	.02 (.04***)	.01 (.05***)	.07* (.04*)	-.04 (.04***)	.12*** (.04***)	-.03 (.02*)
+ Prior Achievement	.06 (.02***)	-.01 (.04***)	.03 (.01)	.08 (.06***)	-.04 (.04**)	.08** (.02***)	-.04 (.06***)
+ Personality	.07* (.20***)	.01 (.28***)	.01 (.62***)	.05 (.07***)	-.04 (.30***)	.10*** (.22***)	-.03 (.24***)
FULL MODEL **Student Type** **+ All Factors** ***(R^2)***	.07** (.20***)	.04* (.30***)	.01 (.63***)	.08** (.14***)	-.02 (.32***)	.14*** (.24***)	-.01 (.26***)

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006); FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational.

5.5.8 Noteworthy covariate factors.

Also worthy of noting are the effects of other major predictors, other than student type, particularly socio-demographic, prior achievement and personality factors, on academic and non-academic outcomes (see Tables 5.5 and 5.6). These provide insight into what is accounting for variance in outcomes beyond any contribution of student type. In terms of *gender* (1 = female, 2 = male) (significant at $p < .001$), boys scored more highly compared to girls on competitive learning (β = .17) and parent relationships (β = .07), but lower on homework completion (β = -.11). In terms of *age* (at $p < .001$), older students scored higher on maladaptive motivation (β = .12) and competitive learning (β = .07) but lower on academic buoyancy (β = -.06), cooperative learning (β = -.13), PBs (β = -.13), homework completion (β = -.18), enjoyment of school (β = -.14), class participation (β = -.09), life satisfaction (β = -.07), and parent relationships (β = -.10). *Parents'/guardians' education* (at $p < .001$) was positively associated with competitive learning (β = .05) and educational aspirations (β = .11). *Prior achievement* (at $p < .001$) was positively associated with adaptive motivation (β = .19), academic buoyancy (β = .08), competitive learning (β = .25), PBs (β = .11), homework completion (β = .15), enjoyment of school (β = .10), educational aspirations (β = .25), class participation (β = .11), life satisfaction (β = .10), participation in ECAs (β = .18), peer relationships (β = .14), and teacher relationships (β = .09), and negatively associated with impeding motivation (β = -.16) and maladaptive motivation (β = -.11).

Along with socio-demographic and prior achievement factors accounting for significant variance, personality was also seen to account for variance in student outcomes. Significant at $p < .001$, *agreeableness* was positively associated with adaptive motivation (β = .20), cooperative learning (β = .38), PBs (β = .18),

enjoyment of school (β = .25), educational aspirations (β = .26), class participation (β = .19), meaning and purpose (β = .21), life satisfaction (β = .24), peer relationships (β = .33), parent relationships (β = .31), and teacher relationships (β = .26), and negatively associated with maladaptive motivation (β = -.22).

Conscientiousness had an effect on a greater number of academic and non-academic outcomes compared with the other personality traits (significant at $p < .001$), and was found to be positively associated with adaptive motivation (β = .39), academic buoyancy (β = .20), competitive learning (β = .11), PBs (β = .36), homework completion (β = .36), enjoyment of school (β = .17), educational aspirations (β = .18), class participation (β = .18), meaning and purpose (β = .20), life satisfaction (β = .21), participation in ECAs (β = .10), peer relationships (β = .11), parent relationships (β = .20), and teacher relationships (β = .22). Conscientiousness was also found to be negatively associated with impeding motivation (β = -.14), maladaptive motivation (β = -.36), and emotional instability (β = -.05).

Also significant at $p < .001$, *extraversion* was positively associated with competitive learning (β = .10), cooperative learning (β = .14), class participation (β = .30), meaning and purpose (β = .09), participation in ECAs (β = .14), and peer relationships (β = .24), but negatively associated with emotional instability (β = -.13). *Neuroticism* (significant at $p < .001$) was found to be positively associated with maladaptive motivation (β = .09), strongly associated with competitive learning (β = .25), impeding motivation (β = .56), and emotional instability (β = .75), and negatively predicted academic buoyancy (β = -.50), meaning and purpose (β = -.05), life satisfaction (β = -.19), peer relationships (β = -.10), and parent relationships (β = -.07). Also of note was the influence of *openness* (significant at $p < .001$) on academic and non-academic outcomes as it was positively associated with adaptive

motivation (β = .10), academic buoyancy (β = .13), competitive learning (β = .12), educational aspirations (β = .10), class participation (β = .10), meaning and purpose (β = .11), and teacher relationships (β = .10) and negatively associated with impeding motivation (β = -.10).

5.5.9 Follow-up inspection of students' attributes.

While chi-squared analyses and *t*-tests indicated differences in attributes of day students and boarders on some factors (e.g. mean age, language background, Aboriginality, parents'/guardians' education, prior achievement, agreeableness, neuroticism, and openness), it is recalled that significant correlations were found for age (boarders were older than day students, r =.19, $p < .001$), parents'/guardians' education (day student parents/guardians generally had higher levels of education, r = -.30, $p < .001$), Aboriginality (that for Indigenous students there was a greater likelihood of being a boarder than a day student, r = -.20, $p < .05$), prior achievement (day students were of higher ability, r = -.19, $p < .001$), agreeableness (day students were generally more agreeable, r = -.10, $p < .01$), neuroticism (boarders were generally higher on neuroticism, r = .05, $p < .01$), and openness (boarders were generally less open to experience, r = -.13, $p < .001$), but no significant correlations were found between student status and gender, language background, conscientiousness, or extraversion at Time 1.

Results of the SEM indicate that boarders were higher on impeding motivation (β = .07, $p < .01$), which is not surprising given that older age, lower parent/guardian education, Aboriginality, lower prior achievement, lower openness, and higher neuroticism are all positively associated with impeding motivation. However, it is interesting to note that boarders scored higher on academic buoyancy (β = .04, $p < .05$), even though younger age, higher prior achievement, lower

neuroticism, and higher openness were positively associated with academic buoyancy. Boarders scored higher on meaning and purpose ($\beta = .07$, $p < .01$) despite younger age, higher agreeableness and openness, yet lower neuroticism tending to be associated with greater meaning and purpose. Boarders scored higher on life satisfaction ($\beta = .04$, $p < .05$) even though younger age, higher parents'/guardians' education, higher prior achievement, higher agreeableness, and openness, and lower neuroticism were positively associated with greater life satisfaction. Boarders scored higher on participation in ECAs ($\beta = .08$, $p < .01$), even withstanding higher parents'/guardians' education, higher prior achievement, higher openness being factors positively associated with participation in ECAs, although their older age and higher neuroticism were positive factors. Also worth noting was the effect of student status on parent relationships, that of boarders having a significantly more positive relationship with their parents than day students ($\beta = .14$, $p < .001$) considering younger age, higher agreeableness and lower neuroticism were found to be associated with positive relationships with parents.

5.6 Chapter Summary

Investigation of Time 1 data consisted of five key stages of analyses aimed at assessing the reliability and validity of data, invariance of measurement across key sub-groups, and testing the data against the hypothesised cross-sectional model. The first stage of analysis demonstrated that the data were normally distributed and scales were reliable. The second stage of analysis demonstrated that the measurement properties were well supported and that the factor structures were sound. The third stage of analysis demonstrated that factor structures of measures were invariant across groups, and that it was therefore justifiable to pool these groups for whole-sample analyses. Based on this evidence, the data were deemed to provide a sound

basis for CFA and SEM of the hypothesised cross-sectional model. The fourth stage—correlational analysis—provided preliminary support for the hypothesised model and relationships between student type, covariates, and outcome factors. The final stage of analysis—structural equation modelling—tested the hypothesised model against the data and subsequently confirmed that the model fit the data well. SEM revealed a number of significant relationships between student type (day/boarding status) and students' academic and non-academic outcomes after multivariate modelling which included the appropriate controls for shared variance (among covariates and outcome variables) and adjusting for the clustering of students within schools was conducted. After controlling for shared variance due to covariates, the overall pattern of results indicates general parity between day students and boarders after controlling for numerous covariates. However, on the few outcomes where significant effects emerge, they are generally positive for boarding students. Importantly, in follow-up analyses that sought to further understand the nature of effects, it appeared that it was background characteristics of boarders that affected outcomes, not boarding *per se*. Following from this, examination of standardised betas for Steps 1 to 5 of the SEM analyses generally highlighted that the bulk of variance in these outcomes is accounted for by age, gender, prior achievement, and to a greater extent, personality. The following chapter summarises findings for Time 2 analyses which are more fully described in Appendix K.

CHAPTER 6: SUMMARY OF TIME 2 CROSS-SECTIONAL RESULTS

This chapter summarises the stability of the empirical structural model by subsequent testing of Time 2 data (collected one year later) with the same cohorts of students surveyed at Time 1. As much of this is a replication of the process of analysis used at Time 1, a summary of results is provided here and a full outline is provided in Appendix K.

The sample includes new students to each school at Time 2, particularly as students join these schools in Years 7 and 11, as well as the loss of Year 12 students from Time 1 cohorts. The validity of the hypothesised model is assessed again via the two aspects of data analysis established in Chapter 5: the psychometrics of instrumentation and the structural components of the hypothesised model. Findings in this chapter are based on Time 2 data (N = 5,276 students, Years 7 to 12 from 12 high schools across Australia),[4] with a particular emphasis on comparison against Time 1 data. Similar to Time 1, the first set of analyses assessed the reliability and distributional properties of scales. Reliability coefficients (Cronbach's alpha) were calculated to test the internal consistency of items for each of the academic and non-academic scales used in the Time 2 instrument (see Appendix K, Table K.1). Evidence from this analysis suggested that scales were normally distributed and reliable.

As with Time 1, the second stage of psychometric analyses tested whether multivariate measurement of the model was replicated with a sound factor structure for academic and non-academic constructs at Time 2. Again, the model provided a

[4] One Time 1 school was dropped as very few consent forms were returned by parents at Time 2.

good fit to the data (χ^2 = 11,610, df = 1,279, RMSEA = .039, CFI = .91) and CFA factor loadings are outlined in Appendix K, Table K.1. The findings from this model replicate the sound factor loadings found at Time 1 and indicate that the factors were again well defined and robust. As with Time 1, items loaded highly on the factors they were intended to measure (average absolute factor loading = .84) and again support the empirical structural model.

Again at Time 2 it was important to explore whether the factor structure across groups in the sample was invariant and hence whether it is justifiable to pool data across these groups for whole-sample analysis. This was tested via multi-group invariance testing (described in Chapter 4) using a series of hierarchical CFA as a function of student type, gender, school year-level (junior high or senior high school), Aboriginality, and language background. Goodness-of-fit indices were used to determine whether factor structures were invariant across groups with particular consideration given to whether changes in the CFI (as described by Cheung & Rensvold, 2002) and RMSEA (see Chen, 2007) meet the criteria of $\Delta CFI < .01$ and $\Delta RMSEA < .015$. Findings for each of these invariance analyses are reported in Appendix J, Table J.2. Again, the results show that the data at Time 2 are predominantly invariant across groups with minor departures on some residuals. This provides support for the pooling of data across groups for the Time 2 data and analysing the hypothesised model at the whole-sample level.

Correlational analysis was used to provide an early insight into relationships between student type and students' academic and non-academic outcomes. The same method as Time 1 was employed in calculating correlations and examination of the latent factor correlation matrix for Time 2 data suggested that all factors were reasonably distinct (see Appendix K, Table K.2).

SEM was employed at Time 2 and sought to assess stability of the hypothesised model with Time 2 data. As was the case at Time 1, five steps were conducted in SEM. Step 1 of the hierarchical model included only *student type* (day/boarding status) as the predictor of academic and non-academic outcomes. Step 2 in the hierarchical analyses controlled for *socio-demographic* factors and revealed there were no significant differences found between day and boarding students on 14 of 19 academic and non-academic outcomes. Step 3 in the hierarchical analyses controlled for socio-demographic and *prior achievement* factors, enabling the role of student type to be tested once moderated by the addition of additional covariates. Step 4 in the hierarchical analyses controlled for socio-demographic, prior achievement, and *personality* factors, enabling the role of student type to be assessed once moderated by the addition of these three covariate sets. Step 5 in the hierarchical analyses represents the full, empirical structural model and controlled for socio-demographic, prior achievement, personality, and *school-level* factors. The SEM for each of these steps yielded acceptable fit to the data (see Appendix J, Table J.2).

As shown in Appendix J, Table J.2, multivariate modelling that comprised the appropriate controls for shared variance (among covariates and outcome variables) and adjustments for the clustering of students within schools, identified a number of significant links between student type (day/boarding status) and academic and non-academic outcomes. Consistent with Time 1 and after controlling for variance in covariates, at Time 2 the overall finding for student type was one of parity between day and boarding students. However, where significant effects emerged, they generally favour boarding students who were higher in adaptive motivation, impeding motivation, meaning and purpose, life satisfaction, parent

relations, and ECAs and lower on absenteeism. As was also the case at Time 1, it appears that at Time 2 the bulk of variance in outcomes is again accounted for by age, gender, prior achievement, parents'/guardians' education, and personality. Indeed, as with Time 1, in follow-up analyses, it appears that significant boarding effects are due to background characteristics of boarders more than boarding itself (see Appendix K). Chapter 7 presents findings from the longitudinal phase of the study.

CHAPTER 7: LONGITUDINAL RESULTS

7.1 Introduction

Previous chapters (see Chapters 5 and 6) have demonstrated strong psychometric properties of the instrumentation at Time 1 and Time 2 (via CFAs) and have also provided evidence to support the empirical cross-sectional model (via SEMs). Having estimated and confirmed the stability of the empirical cross-sectional model at both Time 1 and Time 2, it is important now to assess the validity and stability of this model across time for students matched at both Time 1 and Time 2.

Therefore, this chapter seeks to assess the structural model using longitudinal data. In doing so, it addresses the central question of whether, over the course of a year, boarders gain or decline in academic and non-academic outcomes to different extents compared to day students. The present approach to modelling these longitudinal data is through the estimation of autoregressive paths linking variables at Time 1 with corresponding variables at Time 2 (e.g., the path between Time 1 academic buoyancy and Time 2 academic buoyancy). In the current study, student type (day/boarding status) predicting Time 2 outcomes can then be more properly viewed as predictive of gains or declines because they represent positive or negative residuals after prior variance has been partialled (Martin, 2011; Martin et al., 2013). Hence, incorporating time in the research design enabled the examination of gains or declines on academic and non-academic outcome measures, having controlled for Time 1 variance in these outcomes. The analyses, explained in further detail below, achieve this via hierarchical SEM and by controlling for prior variance in academic and non-academic outcomes as well as incorporating covariates.

The sample includes matched students (N = 2,002 students, Years 7 to 12) who participated at both Time 1 and Time 2 from 12 high schools involved in the

study at Time 2. Students who were a day student at Time 1 and changed to being a boarder at Time 2, and vice versa, were excluded from the matched sample (n = 25) so as not to confound the results due to their change of day/boarding student status. To assess the extent to which the data fits the hypothesised model, five key analyses were conducted (consistent with Time 1 and Time 2). The first set of analyses examined the properties of central constructs by considering the reliability and distributional properties of scales used in the study. The second set of analyses examined the measurement properties of the model via CFA to test the underlying factor structure; that is, whether items in the survey load onto their respective target factors. The third set of analyses tested whether the factor structure was invariant across key sub-groups of the longitudinal sample—in this case, Time 1 matched and unmatched groups, Time 2 matched and unmatched groups, and Time 1 and Time 2 matched groups—to ascertain whether the measurement properties between matched and unmatched groups were significantly different. The fourth set of analyses examined the correlational relationships between factors in the longitudinal model.

The final set of analyses used SEM to assess the longitudinal, empirical model (see Figure 4.2) with student type (day/boarding status) as a predictor of academic and non-academic outcomes at Time 2, while controlling for socio-demographic, prior achievement, personality, and school-level factors as well as prior variance attributed to Time 1 academic and non-academic outcomes. Importantly, it is this last step of the longitudinal analysis (i.e., controlling for shared variance of Time 1 outcomes and covariates) that allows the unique contribution of student type and its effect on gains or declines in academic and non-academic outcomes, to be assessed. Subsidiary analysis was conducted with a group of students who were new to boarding at Time 2 (previously surveyed prior to

enrolment) to address the question as to whether boarders had already changed (in their first year) and thus whether further change in later years may not be detectable.

7.2 Reliability Analysis and Basic Descriptive Statistics of Longitudinal Data

Consistent with Time 1 and Time 2, the first set of analyses assessed the reliability and distributional properties of scales. In terms of properties of central constructs (e.g., motivation, engagement, academic buoyancy, meaning and purpose), the mean scores of Time 1 and Time 2 academic and non-academic outcomes in the matched sample reflect prior research (Green, Martin, & Marsh, 2007; Martin, 2007; Martin & Marsh, 2006, 2008a, 2008b). Standard deviations of factors are proportional to their scale and this too is in line with prior findings (Green et al., 2007; Martin, 2007; Martin & Marsh, 2006, 2008a) as well as Time 1 and Time 2 results. Skewness values less than two and kurtosis values less than seven are considered acceptable ranges for data displaying normal distribution (see Curran, West, & Finch, 1996). As was the case at Time 1 and Time 2, there was evidence of absenteeism being leptokurtic (i.e., a positive value of excess kurtosis or "peakedness" of distribution) and positively skewed (i.e., assymetrical distribution of data with a greater concentration of data for lower results) but this was to be expected as most students generally have few days absent and this is particularly the case for boarders. Taken together, evidence from skewness, kurtosis, and standard deviations generally suggested that scales were approximately normally distributed (see Table 7.1).

The internal consistency of items for each of the academic and non-academic scales was assessed by calculating reliability coefficients (Cronbach's alpha) (see Table 7.1). Reliability coefficients closer to one are indicative of higher reliability

with coefficients of .70 desirable, although coefficients of .65 are regarded as acceptable (see Anastasi & Urbina, 1997; Sattler, 2001), and thus these scales are assessed as internally consistent. Table 7.1 establishes that all factors in the study again displayed acceptable to excellent levels of reliability as measured by Cronbach's alpha for Time 1 data (M = .82), ranging from .68 for parent education (a 2-item scale) to .93 for adaptive motivation and Time 2 data (M = .83) ranging from .69 for parent education to .93 for adaptive motivation. In summary, reliability coefficients of the longitudinal data indicated reliable scales.

Table 7.1

Longitudinal Descriptive Statistics, Cronbach's Alpha, and Factor Loadings for Time 1 and Time 2 Substantive Scales

	Time 1				Time 2			
Scale	**Mean (*SD*)**	**Skewness/ Kurtosis**	**Cronbach's Alpha**	**CFA Loadings Range (Mean)**	**Mean (*SD*)**	**Skewness/ Kurtosis**	**Cronbach's Alpha**	**CFA Loadings Range (Mean)**
Motivation								
Adaptive Motivation	5.30 (0.87)	-0.55/0.23	.93	.68–.77 (.73)	5.17 (0.89)	-0.30/-0.17	.93	.64–.77 (.71)
Impeding Motivation	3.50 (1.09)	0.14/-0.40	.85	.57–.75 (.66)	3.57 (1.07)	0.01/-0.50	.85	.57–.73 (.65)
Maladaptive Motivation	2.25 (1.01)	0.90/0.52	.83	.66–.82 (.74)	2.45 (1.13)	0.65/-0.26	.86	.67–.84 (.76)
Academic Buoyancy								
Buoyancy	4.70 (1.24)	-0.37/-0.11	.80	.83–.89 (.86)	4.57 (1.26)	-0.31/-0.14	.80	.82–.89 (.85)
Student Approaches to Learning								
Competitive Learning	5.01 (1.29)	-0.51/-0.20	.82	.87–.88 (.88)	5.04 (1.27)	-0.53/-0.03	.81	.85–.85 (.85)
Cooperative Learning	5.21 (1.07)	-0.62/0.31	.80	.74–.95 (.84)	5.04 (1.10)	-0.49/0.23	.80	.85–.85 (.85)
PBs	5.41 (1.15)	-0.56/-0.06	.89	.89–.92 (.91)	5.20 (1.14)	-0.28/-0.40	.87	.78–.90 (.84)
Academic Engagement								
Enjoyment of School	5.68 (1.28)	-1.23/1.30	.91	.91 –. 92 (.91)	5.39 (1.36)	-.086/0.23	.90	.87–.88 (.87)
Educational Aspirations	5.94 (1.05)	-1.28/1.51	.79	.74–.88 (.81)	5.88 (1.12)	-1.14/0.85	.82	.78–.87 (.83)
Class Participation	5.44 (1.17)	-0.69/0.22	.90	.89–.92 (.91)	5.29 (1.20)	-0.54/-0.09	.89	.90–.91 (.90)
Absenteeism*	3.43 (5.09)	4.40/33.55	–	1.00	3.44 (5.25)	4.69/36.22	–	1.00
Homework Completion*	4.38 (0.69)	-1.11/1.98	–	1.00	4.20 (0.79)	-1.08/1.73	–	1.00

Table 7.1 (Continued)

Academic Ability								
Prior Achievement[#]	0.00 (0.93)	-0.41/-0.03	.84	.85–.85 (.85)	0.13 (0.92)	-0.34/-0.30	.84	.84–.85 (.85)
Non-academic Outcomes								
Meaning and Purpose	4.95 (1.30)	-0.55/-0.06	.83	.77–.93 (.85)	4.91 (1.33)	-0.45/-0.19	.83	.78–.93 (.86)
Life Satisfaction	5.12 (1.12)	-0.53/0.11	.78	.71–.84 (.78)	5.04 (1.13)	-0.45/-0.09	.77	.74–.83 (.78)
Emotional Instability	3.72 (1.34)	0.00/-0.57	.81	.81–.88 (.85)	3.82 (1.37)	-0.03/-0.55	.82	.83–.89 (.86)
Extracurricular Activities[*]	3.90 (2.60)	0.84/1.21	–	1.00	4.34 (2.89)	1.13/2.01	–	1.00
Peer Relationships	5.64 (1.01)	-1.08/1.43	.83	.83–.83 (.83)	5.52 (1.10)	-0.83/0.44	.84	.83–.86 (.84)
Parent Relationships	5.89 (1.19)	-1.35/1.64	.85	.86–.91 (.88)	5.68 (1.28)	-1.07/0.68	.85	.86–.90 (.88)
Teacher Relationships	5.29 (1.13)	-0.74/0.56	.86	.83–.89 (.86)	5.15 (1.20)	-0.64/0.07	.86	.83–.90 (.86)
Personality								
Agreeableness	5.61 (0.84)	-0.83/1.02	.79	.79–.80 (.79)	5.52 (0.97)	-0.86/0.97	.82	.82–.84 (.83)
Conscientiousness	4.82 (1.11)	-0.25/-0.27	.83	.80–.93 (.86)	4.77 (1.15)	-0.20/-0.28	.84	.81–.92 (.87)
Extraversion	4.99 (1.05)	-0.40/-0.10	.82	.80–.91 (.85)	4.94 (1.09)	-0.35/-0.22	.83	.81–.89 (.85)
Neuroticism	3.57 (0.95)	0.06/0.05	.72	.77–.78 (.78)	3.73 (1.01)	0.04/0.03	.73	.75–.81 (.78)
Openness	5.01 (0.90)	-0.30/-0.11	.72	.62–.95 (.79)	5.03 (0.96)	-0.37/0.14	.74	.68–.91 (.79)

Note. * single-item scales and thus reliability and factor loading ranges not available (factor loading is fixed to 1); [#] standardised by year-level.

7.3 Longitudinal Confirmatory Factor Analysis of the Instrumentation

The second stage of psychometric analyses used CFA to test whether multivariate measurement of the model was replicated with a sound factor structure for academic and non-academic constructs using longitudinal data. CFA and MLR estimation (as described in Chapter 4) were deemed an appropriate procedure to examine the degree to which items from the survey load onto the target factors they are seeking to measure. Goodness-of-fit indices were then used to assess how closely the hypothesised model represented the data.

As was noted and taken into consideration in Time 1 and Time 2 analyses and results, students are clustered within schools. Hence, longitudinal analyses accounted for this hierarchical structuring of the data within schools by using the "complex" command in M*plus* to avoid erroneously conflating units/levels of analysis, dependencies within groups, and biased standard errors in results (see Goldstein, 2003; Hox, 2010; Raudenbush & Bryk, 2002). Analysing the data in this way provides adjusted standard errors and, thus, does not bias tests of statistical significance (Muthén & Muthén, 1998–2012).

The model provided a good fit to the longitudinal data (χ^2 = 13,259, *df* = 3,685, RMSEA = .036, CFI = .91) and CFA factor loadings are outlined in Table 7.1. The findings from the longitudinal analysis are consistent with the sound factor loadings established at Time 1 and Time 2 and again indicate that the factors were well defined and robust. As with Time 1 and Time 2, items loaded highly on the factors they were intended to measure (average absolute Time 1 factor loading = .82 and average absolute Time 2 factor loading = .83), thus again providing support for the empirical structural model.

In summary, this stage of analyses set out to establish the soundness of the instrument and preliminary descriptive and psychometric analyses of the longitudinal data provides evidence to support this (previously established for Time 1 and Time 2 data). This analysis highlights that standard deviations are proportional to scale means, scales are approximately normally distributed, scales are reliable as indicated by Cronbach's alpha, and multidimensional measurement by way of CFA indicates good model fit and acceptable loadings using longitudinal data. Now that the instrument has been established as being psychometrically sound, the next stage of analysis seeks to establish that the factor structure is invariant across the two main groups in the longitudinal study—those matched between Time 1 and Time 2 and those unmatched and therefore not part of subsequent analyses.

7.3.1 Measurement invariance across key sub-groups.

It was important to ascertain that the factor loadings, correlations, variances, and residuals/uniquenesses are invariant across the key groups of the study; in this case those of the matched and unmatched samples as well as from Time 1 to Time 2 matched groups. When conducting longitudinal analyses, such as in the case of this study, it is important to establish that measurement properties do not differ (are invariant) between the group of students retained in the longitudinal, matched group and those not analysed (e.g., students unmatched because they were Year 12 at Time 1 or Year 7 at Time 2). For completeness, invariance between the Time 1 and Time 2 matched groups in the longitudinal analyses was also assessed.

As was the case at Time 1 and Time 2, invariance was tested via multi-group invariance testing (described in Chapter 4) using a series of multi-group CFAs as a function of Time 1 matched and unmatched groups and Time 2 matched and unmatched groups, and subsequently comparing the Time 1 and Time 2 matched

groups. The same five models were again used with the longitudinal data, beginning with a baseline model that is least restrictive and in which no equality constraints are imposed, with subsequent tests for equivalence involving more stringent constraints for particular parameters.

Goodness-of-fit indices are used to determine whether factor structures are invariant across groups with particular consideration given to whether changes in the CFI (as described by Cheung & Rensvold, 2002) and RMSEA (see Chen, 2007) meet the criteria of $\Delta CFI < .01$ and $\Delta RMSEA < .015$. Findings for each of these invariance analyses are reported in Appendix J, Table J.3. The minimum criteria for invariance is factor loadings which are invariant across groups and the other criteria of uniquenesses and correlations being invariant are desirable (see Marsh, 1993). Therefore, these results seek to provide evidence that the measurement properties of the matched groups are invariant, do not differ and are not biased by sampling, compared with those unmatched and not considered in longitudinal modelling.

7.3.1.1 Time 1 matched and unmatched.

As with previous invariance testing, the first set of multi-group CFAs examined the factor structure as a function of Time 1 matched and unmatched groups, establishing a baseline model that allowed all factor loadings, uniquenesses, and correlations/variances to be freely estimated (or unconstrained). This model yielded an acceptable fit to the data (χ^2 = 13,156, *df* = 1,669, RMSEA = .051, CFI = .92) (see Appendix J, Table J.3). While these fit indices suggest that this model is a good fit to the data, more stringent models were tested. Based on criteria for evidence of lack of invariance (see Chen, 2007; Cheung & Rensvold, 2002), the results indicate that, when subsequent parameters of the factor structure are held invariant across Time 1 matched and unmatched groups, there is relative invariance

across all models as indicated by no changes in CFI greater than .01 and no changes in RMSEA greater than .015. This suggests that in considering the factor structure of the longitudinal data, factor loadings, uniquenesses, and factor correlations/variances are relatively invariant for Time 1 matched and unmatched groups.

7.3.1.2 Time 2 matched and unmatched.

As described previously, the first set of multi-group CFAs examined the factor structure as a function of Time 2 matched and unmatched groups to establish a baseline model where all factor loadings, uniquenesses, and correlations/variances were allowed to be freely estimated. This model yielded an acceptable fit to the data (χ^2 = 12,865, *df* = 1,669, RMSEA = .050, CFI = .93) (see Appendix J, Table J.3). Again, although these fit indices indicate good model fit of the data, more rigorous models were tested. Based on criteria for evidence of lack of invariance the results indicate that, when subsequent parameters of the factor structure are held invariant across Time 2 matched and unmatched groups, there is relative invariance across all models as indicated by no changes in CFI greater than .01 (Cheung & Rensvold, 2002) and no changes in RMSEA greater than .015 (Chen, 2007). Thus, factor loadings, factor correlations, and uniquenesses (residuals) are invariant across the Time 2 matched and unmatched groups.

7.3.1.3 Time 1 and Time 2 matched groups.

As was the case for other tests of invariance, the first set of multi-group CFAs examined the factor structure as a function of Time 1 and Time 2 matched groups to establish a baseline model where all factor loadings, uniquenesses, and correlations/variances were allowed to be freely estimated. This model yielded an acceptable fit to the data (χ^2 = 8,206, *df* = 1,669, RMSEA = .044, CFI = .93) (see Appendix J, Table J.3). As previously was the case, while these fit indices indicate

good model fit of the data for the baseline model (i.e., unconstrained, free model), more rigorous models were tested. Based on criteria for evidence of lack of invariance the results indicate that, when subsequent parameters of the factor structure are held invariant across Time 1 and Time 2 matched groups, there is relative invariance across all models as indicated by no changes in CFI greater than .01 (Cheung & Rensvold, 2002) and no changes in RMSEA greater than .015 (Chen, 2007). Thus, factor loadings, factor correlations, and uniquenesses (residuals) are invariant across the Time 1 and Time 2 matched groups.

Considering the invariance of Time 1 and Time 2 groups of matched and unmatched students, these findings provide support for aggregating the data and analysing the hypothesised model using the longitudinal set of data (i.e., students matched at Time 1 and Time 2) as there appears to be no significant variance in the measurement properties for those students surveyed but not included in the analyses (unmatched) and those who formed the longitudinal, matched group for analyses. Having demonstrated the relative invariance across these groups, the matched longitudinal data is now the focus of correlational and SEM analyses.

7.3.2 Correlations among factors.

Correlational analysis of the longitudinal data was used to gain a preliminary understanding of cross-time relationships between student type and students' academic and non-academic outcomes. As was established in Chapters 5 and 6, the focus of the present study is the relationship between student type and academic and non-academic outcomes and therefore these correlations are highlighted here (see Table 7.2). The full range of relationships among all factors, including between Time 1 outcomes and their respective Time 2 factors, are also presented in Table 7.2.

Correlational analysis was conducted using the same method as previously described in earlier chapters, adjusting for clustering of students within schools by implementing the "complex" command in M*plus*. Also described in Chapter 4 was the use of item parcels to create latent factors that are the basis of the correlation matrix. As was discussed earlier, using item parcels can reduce the ratio of estimated parameters to sample size when researchers are estimating complex models.

Inspection of the latent factor correlation matrix for longitudinal data suggested that all factors were reasonably distinct (see Table 7.2). Also, correlations tended to be in the direction hypothesised in the proposed model and similar in strength to Time 1 and Time 2 cross-sectional correlation analyses. As is evident in Table 7.2, student type (1 = day; 2 = boarding) is significantly correlated with the following dependent variables: impeding motivation (r = .13, p < .001), maladaptive motivation (r = .11, p < .01), educational aspirations (r = -.15, p < .05), cooperative learning (r = -.08, p < .05), absenteeism (r = -.06, p < .05), peer relationships (r = -.10, p < .05), and participation in ECAs (r = .07, p < .05). These correlations show that, in general, boarding students tended to be higher in impeding motivation, maladaptive motivation, and participation in ECAs, but tended to be lower in educational aspirations, cooperative learning, absenteeism, and peer relations. However, correlational analysis does not control for shared variance among factors or for the influence of hypothesised covariates that is subsequently examined later using SEM. Also worth noting are the correlations with demographic factors such that student type is correlated with parent education (r = -.23, p < .001) and prior achievement (r = -.17, p < .001), Aboriginality (r = -.12 at p < .01), and age (r = .12 at p < .05). In terms of personality, student type is negatively correlated with agreeableness (r = -.12, p < .01) and openness (r = -.13, p < .001). Table 7.2 reports

other notable correlations that exist between student type and covariates and among academic, non-academic, and personality factors.

For academic outcomes, the following significant and positive correlations were evident between Time 1 (prior) and counterpart Time 2 factors: adaptive motivation (r = .69), impeding motivation (r = .84), maladaptive motivation (r = .71), academic buoyancy (r = .57), enjoyment of school (r = .59), educational aspirations (r = .63), class participation (r = .56), competitive learning (r = .63), cooperative learning (r = .54), PBs (r = .55), homework completion (r = .48), and absenteeism (r = .16) (all these test-retest correlations are significant at $p < .001$). For non-academic outcomes, the following significant and positive correlations were evident between Time 1 (prior) and counterpart Time 2 factors: meaning and purpose (r = .57), life satisfaction (r = .69), emotional instability (r = .61), peer relationships (r = .55), parent relationships (r = .64), teacher relationships (r = .59), and participation in ECAs (r = .40) (all are significant at $p < .001$).

Table 7.2

CFA Factor Correlations of Demographic Factors with Academic and Non-academic Outcomes

	Student Type (Day/Brd Ststus)	**Gender**	**Age**	**Language Background**	**Parent Education**	**Aboriginality**	**Prior Achievement**	**Agreeableness**	**Conscientiousness**	**Extraversion**	**Neuroticism**	**Openness**
Student Type	–	–	–	–	–	–	–					
Gender	01	–	–	–	–	–	–					
Age	*12*	03	–	–	–	–	–					
Language Background	02	05	-01	–	–	–	–					
Parent Education	**-23**	14	-05	09	–	–	–					
Aboriginality	-12	09	03	-03	**15**	–	–					
Prior Achievement	**-17**	13	-01	11	**35**	17	–					
Agreeableness	-12	-12	-06	*-06*	12	**10**	**18**					
Conscientiousness	-01	-03	-03	01	04	**11**	**18**	**47**				
Extraversion	-01	-04	**-10**	**-12**	05	01	**09**	**25**	**09**			
Neuroticism	02	**-19**	**12**	04	**-10**	-04	-12	**-26**	**-17**	**-24**		
Openness	**-13**	-02	-01	02	**18**	*11*	**38**	**45**	**35**	**20**	*-08*	
Adaptive Motivation	-07	-02	-04	06	18	05	**30**	**45**	**55**	09	**-13**	**41**
Impeding Motivation	**13**	*-11*	11	*05*	**-19**	*-12*	**-28**	**-23**	**-24**	**-16**	**56**	**-26**
Maladaptive Motivation	11	04	*16*	04	-18	**-14**	**-23**	**-48**	**-52**	**-12**	**24**	**-32**
Academic Buoyancy	-03	**18**	**-10**	03	*08*	*06*	**19**	**19**	**22**	**17**	**-54**	**22**
Enjoyment of School	-06	.08	-04	02	**17**	11	**27**	**41**	**36**	**15**	**-22**	**27**
Educational Aspirations	*-15*	-06	01	07	**29**	11	**39**	**44**	**37**	**11**	**-13**	**40**
Class Participation	-06	-02	*-08*	-04	**17**	09	**28**	**41**	**37**	**37**	**-17**	**38**
Competitive Learning	-05	**21**	08	**12**	**13**	09	**36**	**18**	**21**	08	12	**29**
Cooperative Learning	*-08*	-04	**-14**	02	03	04	07	**37**	**17**	**23**	**-17**	**16**
Personal Best Goals	-06	01	*-10*	*08*	07	04	**22**	**41**	**49**	**10**	**-12**	**32**
Homework Completion	-07	-05	**-13**	02	**15**	10	**25**	**29**	**47**	02	**-09**	**25**
Absenteeism	*-06*	*-08*	-01	-03	-11	-04	**-07**	-02	-07	**09**	04	01
Meaning & Purpose	-01	06	-04	06	05	02	**18**	**32**	**34**	**19**	**-16**	**28**
Life Satisfaction	-03	01	-05	-04	**14**	07	**22**	**38**	**32**	**22**	**-33**	**24**
Emotional Instability	03	**-19**	**12**	**08**	*-09*	*-06*	**-11**	**-15**	**-12**	**-28**	**73**	**-11**
Peer Relationships	*-10*	-06	01	-03	**17**	**10**	**28**	**44**	**32**	**32**	**-24**	**31**
Parent Relationships	06	01	*-07*	01	*10*	05	**13**	**40**	**33**	**10**	**-25**	**20**
Teacher Relationships	-08	03	04	03	**16**	10	**23**	**41**	**36**	**07**	**-18**	**30**
Extracurricular Activities	*07*	01	*06*	-04	**11**	02	**28**	*11*	**14**	**13**	01	**20**

Note. Decimal point omitted. *r* values significant at $p < .001$ are indicated in **bold**, $p < .01$ underlined, and $p < .05$ in *italics*.

Table 7.2 (Continued)

	Adaptive Motivation	Impeding Motivation	Maladaptive Motivation	Academic Buoyancy	Enjoyment of School	Educational Aspirations	Class Participation	Competitive Learning	Cooperative Learning	Personal Best Goals	Homework Completion	Absenteeism	Meaning, & Purpose	Life Satisfaction	Emotional Instability	Peer Relationships	Parent Relationships	Teacher Relationships	Extracurricular Activities
Time 1 Prior Factor	**69**	**84**	**71**	**57**	**59**	**63**	**56**	**63**	**54**	**55**	**48**	**16**	**57**	**69**	**61**	**55**	**64**	**59**	**40**
Adaptive Motivation	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Impeding Motivation	**-19**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Maladaptive Motivation	**-75**	**54**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Academic Buoyancy	**33**	**-68**	**-25**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Enjoyment of School	**62**	**-26**	**-62**	**40**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Educational Aspirations	**77**	**-24**	**-67**	**33**	**74**	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Class Participation	**64**	**-25**	**-55**	**41**	**68**	**68**	–	–	–	–	–	–	–	–	–	–	–	–	–
Competitive Learning	**46**	**11**	**-24**	08	**35**	**45**	**36**	–	–	–	–	–	–	–	–	–	–	–	–
Cooperative Learning	**41**	-04	**-27**	**29**	**43**	**36**	**50**	**24**	–		–	–	–	–	–	–	–	–	–
Personal Best Goals	**82**	**-12**	**-60**	**38**	**58**	**66**	**62**	**42**	**45**	–	–	–	–	–	–	–	–	–	–
Homework Completion	**46**	**-14**	**-52**	**13**	**30**	**35**	**29**	**17**	**14**	**42**	–	–	–	–	–	–	–	–	–
Absenteeism	-10	06	13	-04	**-10**	-06	*-05*	**-06**	02	-09	**-13**	–	–	–	–	–	–	–	–
Meaning & Purpose	**55**	**-18**	**-36**	**34**	**45**	**42**	**46**	**27**	**35**	**53**	**21**	-01	–	–	–	–	–	–	–
Life Satisfaction	**54**	**-28**	**-45**	**46**	**63**	**54**	**53**	**25**	**37**	**52**	**26**	-03	**68**	–	–	–	–	–	–
Emotional Instability	*-07*	**72**	**26**	**-55**	**-19**	**-12**	**-17**	**11**	**-13**	*-06*	-07	01	-10	**-31**	–	–	–	–	–
Peer Relationships	**58**	**-24**	**-50**	**35**	**71**	**67**	**67**	**33**	**58**	**57**	**26**	-01	**42**	**58**	**-22**	–	–	–	–
Parent Relationships	**50**	**-25**	**-50**	**31**	**50**	**50**	**43**	**19**	**28**	**44**	**27**	*-06*	**48**	**72**	**-24**	**46**	–	–	–
Teacher Relationships	**63**	**-26**	**-50**	**45**	**75**	**66**	**65**	**35**	**36**	**60**	**31**	-06	**44**	**56**	**-12**	**59**	**47**	–	–
Extracurricular Activities	**18**	-01	**-12**	*05*	**15**	**15**	**19**	**17**	06	**14**	**14**	*-05*	**16**	**13**	-01	**13**	**07**	**10**	–

Note. Decimal point omitted. *r* values significant at $p < .001$ are indicated in **bold**, $p < .01$ underlined, and $p < .05$ in *italics*.

7.4 Assessment of the Hypothesised Longitudinal Model

While correlational analysis is able to describe the relationships between student type (day/boarding status) and other predictors with academic and non-academic outcomes, it is limited in that this form of analysis is unable to take into account shared variance between multiple factors. Thus it is necessary to conduct multivariate analysis that controls for shared variance and hence identifies the unique variance that can be apportioned to student type or other predictors. For the same reasons as Time 1 and Time 2, SEM is an appropriate technique utilised for this purpose, where in the one analytic model the relationships between student type and other demographic factors with academic and non-academic outcomes can be modelled. Importantly, in this longitudinal empirical model (see Figure 4.2), the prior variance of Time 1 outcomes is controlled for by including Time 1 outcomes as predictors in the model while also controlling for the shared variance among predictors (described below) and academic and non-academic outcomes.

SEM was employed on the longitudinal data and sought to assess how well the hypothesised model fit these data. Again, as was the case for Time 1 and Time 2 SEM, five hierarchical steps were conducted as well as an additional step that included controlling for Time 1 prior variance. First, *student type* (day/boarding status) was included as the sole predictor of outcomes (Step 1). Student type was included first because it was of interest to examine how its role is systematically moderated as subsequent predictors are entered into the model. This provides useful guidance as to factors that operate alongside student type to affect its relationship with academic and non-academic outcomes. Then, *Time 1 outcome factors* (Step 2) were added to the model and their respective influence on Time 2 corresponding outcome factors were estimated. The ordering of the steps was important to allow the

central question of the longitudinal study to be answered: that is, whether, over the course of a year, boarders gain or decline in academic and non-academic outcomes to a differential extent compared to day students. Subsequent modelling included *socio-demographic* covariates (Step 3), *prior achievement* (Step 4), *personality* (Step 5), and *school-level* factors (Step 6) in the hierarchical analysis, which represented the full, empirical model (see Figure 4.2). These steps allowed for the predictive parameters between student type and outcomes to be modelled while controlling for shared variance with corresponding Time 1 outcome factors and the influence of socio-demographic, prior achievement, personality, and school-level covariates. Results for Steps 1 to 6 are outlined in Tables 7.3 and 7.4 with the results for the full model (Step 6) outlined in Tables 7.5 and 7.6.

SEM was conducted in M*plus* 7 to test the proposed model, with the ordering of this model such that student type predicted academic and non-academic outcomes, controlling for the effects of prior variance of Time 1 outcomes, socio-demographics, prior achievement, personality, and school-level variables. The full hypothesised model is presented in Figure 4.2. As was the case with earlier analyses, the longitudinal SEM was based on item parcels and the hierarchical clustering of students within schools accounted for by using the "complex" command in M*plus*.

7.4.1 Step 1: Student type (day/boarding status).

The first step in the hierarchical analyses included only *student type* (day/boarding status) as the sole predictor of academic and non-academic outcomes. To disentangle student type effects from effects due to prior variance, socio-demographic, prior achievement, personality, and school-level factors, this step is contrasted with Steps 2 to 6 (described below) that include these covariates. The SEM for this first step yielded an acceptable fit to the data (χ^2 = 3,560, *df* = 593,

RMSEA = .050, CFI = .94). Results due to the inclusion of only student type indicate no significant differences between day and boarding students on 11 of 19 academic and non-academic outcomes. In terms of academic measures, boarders scored higher than day students on impeding motivation (β = .13, $p < .001$), maladaptive motivation (β = .11, $p < .01$), but lower than day students on cooperative learning (β = -.08), homework completion (β = -.07), absenteeism (β = -.06), and educational aspirations (β = -.15) (at $p < .05$). On non-academic measures, boarders scored significantly higher than day students on participation in ECAs (β = .07), yet lower than day students on peer relationships (β = -.10) (at $p < .01$). Results for Steps 1 to 5 standardised β coefficients are outlined in Tables 7.3 and 7.4, for the full model (Step 6) standardised β coefficients in Tables 7.5 and 7.6, and significant predictive relationships illustrated in Figures 7.1 and 7.2 for those outcomes measured.

Table 7.3

Longitudinal Standardised Beta Coefficients (β) for Academic Outcomes in Each Step of the Hierarchical Model

	Adaptive Motivation	Impeding Motivation	Maladaptive Motivation	Academic Buoyancy	Competitive Learning	Cooperative Learning	Personal Bests	Homework Completion	Absenteeism	Enjoyment of School	Educational Aspirations	Class Participation
	β ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***
STEP 1												
Student Type (1=Day/2=Boarding)	-.07 (.01)	.13*** (.02*)	.11** (.01)	-.03 (.01)	-.05 (.01)	-.08* (.01)	-.06 (.01)	-.07* (.01)	-.06* (.01)	-.07 (.01)	-.15* (.02)	-.07 (.01)
STEP 2												
Student Type (1=Day/2=Boarding) **(+ Time 1 prior variance)**	-.03 (.37***)	.02 (.55***)	.03 (.42***)	-.01 (.30***)	-.02 (.38***)	-.06* (.29***)	-.04 (.29***)	-.03 (.19***)	-.07* (.03**)	-.02 (.30***)	-.08 (.31***)	-.04 (.29***)
STEP 3												
Student Type (1=Day/2=Boarding) **(+ socio-demographics, Time1 outcome)**	-.01 (.39***)	-.01 (.57***)	.01 (.44***)	.01 (.31***)	-.02 (.40***)	-.05 (.29***)	-.03 (.29***)	.01 (.22***)	-.10** (.05***)	.01 (.33***)	-.04 (.37***)	-.01 (.31)
STEP 4												
Student Type (1=Day/2=Boarding) **(+ socio-demographic, prior achievement, Time 1 outcome)**	.01 (.43***)	-.01 (.58***)	-.01 (.45***)	.01 (.32***)	-.01 (.45***)	-.04 (.29***)	-.02 (.32***)	.02 (.24***)	-.10** (.05***)	.02 (.36***)	-.02 (.42***)	.01 (.35***)
STEP 5												
Student Type (1=Day/2=Boarding) **(+ socio-demographics, prior achievement, personality, Time 1 outcome)**	.01 (.59***)	.01 (.67***)	-.01 (.59***)	.01 (.47***)	.01 (.50***)	-.03 (.38***)	-.01 (.46***)	.01 (.36***)	-.10** (.06***)	.02 (.46***)	-.01 (.51***)	.01 (.47***)
STEP 6												
Student Type (1=Day/2=Boarding) **(+ socio-demographics, prior achievement, personality, school, Time 1 outcome)**	.01 (.59***)	.01 (.67***)	-.01 (.60***)	.01 (.47***)	.01 (.51***)	-.03 (.38***)	-.01 (.46***)	.01 (.36***)	-.09** (.07***)	.02 (.47***)	-.01 (.52***)	.01 (.47***)

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006)

Table 7.4

Longitudinal Standardised Beta Coefficients (β) for Non-academic Outcomes in Each Step of the Hierarchical Model

	Meaning & Purpose	**Life Satisfaction**	**Emotional Instability**	**Extracurricular Activities**	**Peer Relationships**	**Parent Relationships**	**Teacher Relationships**
	β ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***
STEP 1							
Student Type (1=Day/2=Boarding)	-.01 (.01)	-.04 (.01)	.04 (.01)	.07* (.01)	-.10* (.01)	.06 (.01)	-.08 (.01)
STEP 2							
Student Type (1=Day/2=Boarding) **(+ Time 1 prior variance)**	-.01 (.32***)	-.02 (.38***)	.02 (.37***)	.07** (.16***)	-.06 (.28***)	.02 (.38***)	-.01 (.29***)
STEP 3							
Student Type (1=Day/2=Boarding) **(+ socio-demographics, Time1 outcome)**	-.01 (.32***)	-.01 (.39***)	-.01 (.38***)	.09*** (.17***)	-.02 (.30***)	.04 (.39***)	.01 (.32***)
STEP 4							
Student Type (1=Day/2=Boarding) **(+ socio-demographic, prior achievement, Time 1 outcome)**	.01 (.34***)	.01 (.41***)	-.01 (.38***)	.11*** (.21***)	-.01 (.34***)	.04 (.40***)	.01 (.34***)
STEP 5							
Student Type (1=Day/2=Boarding) **(+ socio-demographics, prior achievement, personality, Time 1 outcome)**	.01 (.41***)	.01 (.51***)	.01 (.62***)	.11*** (.23***)	-.01 (.46***)	.05 (.48***)	.02 (.44***)
STEP 6							
Student Type (1=Day/2=Boarding) **(+ socio-demographics, prior achievement, personality, school, Time 1 outcome)**	.01 (.41***)	.01 (.51***)	.01 (.63***)	.11*** (.23***)	-.01 (.46***)	.06 (.49***)	.02 (.45***)

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006).

7.4.2 Step 2: Student type after controlling for Time 1 factors.

The second step in the hierarchical analyses controlled for *prior variance due to counterpart Time 1 outcomes,* enabling the role of student type to be examined after the inclusion of Time 1 outcomes. Of key interest here is the role of student type once these are included in the modelling as it begins to shed light on what factors influence the relationship between student type and outcomes. It also indicates whether student type is associated with increases or decreases in outcomes. The SEM for this second step again yielded an acceptable fit to the data (χ^2 = 11,034, *df* = 2,767, RMSEA = .039, CFI = .91). On the academic measures, boarders scored lower than day students on cooperative learning (β = -.06, $p < .05$) and absenteeism (β = -.07, $p < .05$) and in regard to non-academic measures higher than day students on participation in ECAs (β = .07, $p < .01$). However, there were no significant differences found between day and boarding students on 16 of 19 academic and non-academic outcomes. Thus, after controlling for counterpart Time 1 outcomes the modelling suggests few significant gains or declines across the course of the year due to student type (i.e., day/boarding status) and far greater yields due to prior variance.

7.4.3 Step 3: Student type after controlling for socio-demographic and Time 1 factors.

The third step in the hierarchical analyses controlled for *socio-demographic* factors and prior variance due to counterpart Time 1 outcomes, enabling the role of student type to be tested once moderated after the inclusion of these covariates. The SEM for Step 3 again yielded an acceptable fit to the data (χ^2 = 11,693, *df* = 3,061, RMSEA = .038, CFI = .91). On the academic measures, boarders again scored lower than day students on absenteeism (β = -.10, $p < .01$) and in regard to non-academic measures again scored higher than day students on participation in ECAs (β = .09, *p*

< .001). However, there were no significant differences found between day and boarding students on 17 of 19 outcomes measured. The picture remains the same as Step 2: after controlling for counterpart Time 1 outcomes, analyses suggest limited effects due to student type and socio-demographic covariates and far greater yields due to prior variance, with few significant gains or declines of day students or boarders over the course of the year.

7.4.4 Step 4: Student type after controlling for socio-demographic, prior achievement, and Time 1 factors.

The fourth step in the hierarchical analyses controlled for socio-demographic, *prior achievement* factors, and prior variance due to counterpart Time 1 outcomes, enabling the role of student type to be further tested for moderation after the inclusion of these covariates. The SEM for Step 4 again yielded an acceptable fit to the data (χ^2 = 11,977, *df* = 3,190, RMSEA = .037, CFI = .91). On the academic measures, boarders again scored lower than day students on absenteeism (β = -.10, p < .01 and unchanged from Step 3) and in regard to non-academic measures again higher than day students on participation in ECAs (β = .11, p < .001). However, there were no significant differences found between day and boarding students on 17 of 19 outcomes measured. As was evident from Steps 2 and 3, after controlling for counterpart Time 1 outcomes the role of student type is limited once other covariates are included in the analyses. Once again, it appears that boarders do not gain or decline in academic and non-academic outcomes to a differential extent compared to day students.

7.4.5 Step 5: Student type after controlling for socio-demographic, prior achievement, personality, and Time 1 factors.

The fifth step in the hierarchical analyses controlled for socio-demographic, prior achievement, *personality* factors and prior variance due to counterpart Time 1 outcomes, enabling the role of student type to again be tested once moderated after the inclusion of these covariates. The SEM for the fifth step again yielded an acceptable fit to the data (χ^2 = 13,322, *df* = 3,880, RMSEA = .035, CFI = .92). On the academic measures, boarders again scored lower than day students on absenteeism (β = -.10, $p < .01$) and in regard to non-academic measures again scored higher than day students on participation in ECAs (β = .11, $p < .001$); both unchanged from Step 4. However, there were no significant differences found between day and boarding students on 17 of 19 outcomes measured. As was evident from Steps 2 to 4 analyses, after controlling for counterpart Time 1 outcomes there is limited effect of student type due to the inclusion of other covariates in this hierarchical analyses and only on a few outcomes were there significant difference in the extent to which boarders and day students gain or decline.

7.4.6 Step 6: Student type after controlling for socio-demographic, prior achievement, personality, school-level, and Time 1 factors.

The sixth step in the hierarchical analyses controlled for socio-demographic, prior achievement, personality, *school-level* factors, and prior variance due to counterpart Time 1 outcomes. This represents the full, empirical structural model and enabled the role of student type to be tested once moderated after the inclusion of these covariates. The SEM for the sixth step again yielded an acceptable fit to the data (χ^2 = 13,941, *df* = 4,027, RMSEA = .035, CFI = .91). On the academic measures, boarders again scored lower than day students on absenteeism (β = -.09, *p*

< .05) and in regard to non-academic measures again scored higher than day students on participation in ECAs (β = .11, $p < .001$ and unchanged from Step 5). However, there were no significant differences found between day and boarding students on 17 of 19 outcomes measured (see Tables 7.5 and 7.6). Thus, the results suggest few significant gains or declines in academic and non-academic outcomes across the course of the year due to student type. The percentage of explained variance accounted for at Step 6 and standardised beta estimates are presented in Tables 7.5 and 7.6 as well as Figures 7.1 and 7.2 which illustrate significant paths in the longitudinal model.

Table 7.5

Final (Step 6) Longitudinal Standardised Beta Coefficients (β) for Academic Outcomes in the Empirical Structural Model

	Adaptive Motivation	Impeding Motivation	Maladaptive Motivation	Academic Buoyancy	Competitive Learning	Cooperative Learning	Personal Bests	Homework Completion	Absenteeism	Enjoyment of School	Educational Aspirations	Class Participation
FULL MODEL	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**
Student Type (1=Day/2=Boarding)	.01	.01	-.01	.01	.01	-.03	-.01	.01	-.09*	.02	-.01	.01
Time 1 prior variance	.50***	.61***	.52***	.41***	.53***	.47***	.44***	.29***	.14***	.48***	.46***	.43***
Gender (1=FM/2=M)	.02	.01	.03	.03*	.09***	.01	.03	-.07*	-.01	-.02	-.06*	-.01
Age	.06**	.01	.04	.01	.03	-.03	.01	-.08***	-.01	.08**	.04	.03
Language Background (1=ESB/2=NESB)	.02	.03	.01	.03*	.04*	.06	.06**	-.01	.01	.01	.04	-.01
Parent Education	.03	-.04	-.05	-.04	-.05	-.02	-.04	.08*	-.09***	.02	.07*	.03*
Aboriginality (1=Indig/2=non-Indig)	-.05	-.03	-.02	.01	-.04	.01	-.03	.02	-.01	.01	.01	-.01
Prior Achievement	.08**	-.03	.01	.02	.17***	.01	.06*	.09	-.04*	.07	.14***	.09*
Personality												
Agreeableness	.12***	.01	-.19***	-.03	.10***	.27***	.15***	.05	-.01	.18***	.19***	.13***
Conscientiousness	.23***	-.04	-.21***	.04*	.07***	-.01	.23***	.32***	-.06	.09**	.07*	.13***
Extraversion	-.04	.01	.04	.02	.05*	.10**	-.02	-.06*	.09***	.02	-.02	.15***
Neuroticism	-.02	.28***	.08**	-.36***	.20***	-.01	-.01	.01	.03	-.07***	-.03**	-.02
Openness	.10***	-.07*	-.02	.10***	.06*	-.01	.08***	.02	.05	.01	.08**	.09***
School factors												
Single-sex Female (1=FM/2=Co-Ed)	.04*	-.01	.01	-.01	-.02	-.05	.01	.01	.02	-.02	.03*	-.01
Single-sex Male (1=M/2=Co-Ed)	-.01	.05	-.03	-.02	.05	-.05	.03	.08	-.04	.09**	.05	-.02
School Achievement	.03	-.03	.01	.07**	-.02	-.01	-.01	-.05	-.06	.06	-.01	.04
FULL MODEL ***(R^2)***	(.59***)	(.67***)	(.60***)	(.47***)	(.51***)	(.38***)	(.46***)	(.36***)	(.07***)	(.47***)	(.52***)	(.47***)

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006); FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational.

Table 7.6

Final (Step 6) Longitudinal Standardised Beta Coefficients (β) for Non-academic Outcomes in the Empirical Structural Model

	Meaning & Purpose	Life Satisfaction	Emotional Instability	Extracurricular Activities	Peer Relationships	Parent Relationships	Teacher Relationships
FULL MODEL	**β**	**β**	**β**	**β**	**β**	**β**	**β**
Student Type (1=Day/2=Boarding)	.01	.01	.01	.11***	-.01	.06	.02
Time 1 prior variance	.50***	.57***	.34***	.33***	.44***	.56***	.49***
Gender (1=FM/2=M)	.03	-.01	-.07**	-.05*	-.02	-.01	.02
Age	.03	.08**	.01	.02	.07**	.03*	.12***
Language Background (1=ESB/2=NESB)	.03	-.01	.03**	-.05*	-.01	.01	.03***
Parent Education	-.03	.03	-.02	.02	.07**	.04	.01
Aboriginality (1=Indig/2=non-Indig)	-.06**	-.03	-.01	-.06*	-.01	-.03	.01
Prior Achievement	.03	.06	.02	.18***	.09*	.03	.04
Personality							
Agreeableness	.06*	.12***	.02	-.02	.20***	.18***	.19***
Conscientiousness	.14***	.06*	.01	.05*	.07*	.06	.09**
Extraversion	.06*	.05	-.06***	.07**	.10***	-.03	-.04
Neuroticism	-.04	-.15***	.52***	.05**	-.06*	-.12***	-.05***
Openness	.08*	-.02	-.04	.08*	.06	.01	.04*
School factors							
Single-sex Female (1=FM/2=Co-Ed)	-.01	.01	-.03	-.02	.04	.05*	.03
Single-sex Male (1=M/2=Co-Ed)	.02	.01	.02	.03	.06	.05**	.01
School Achievement	.04	-.01	-.01	.05	-.05	-.04	.06
FULL MODEL ***(R^2)***	(.41***)	(.51***)	(.63***)	(.23***)	(.46***)	(.49***)	(.45***)

Note. * $p < .05$, ** $p < .01$, ***$p < .001$; Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006); FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational.

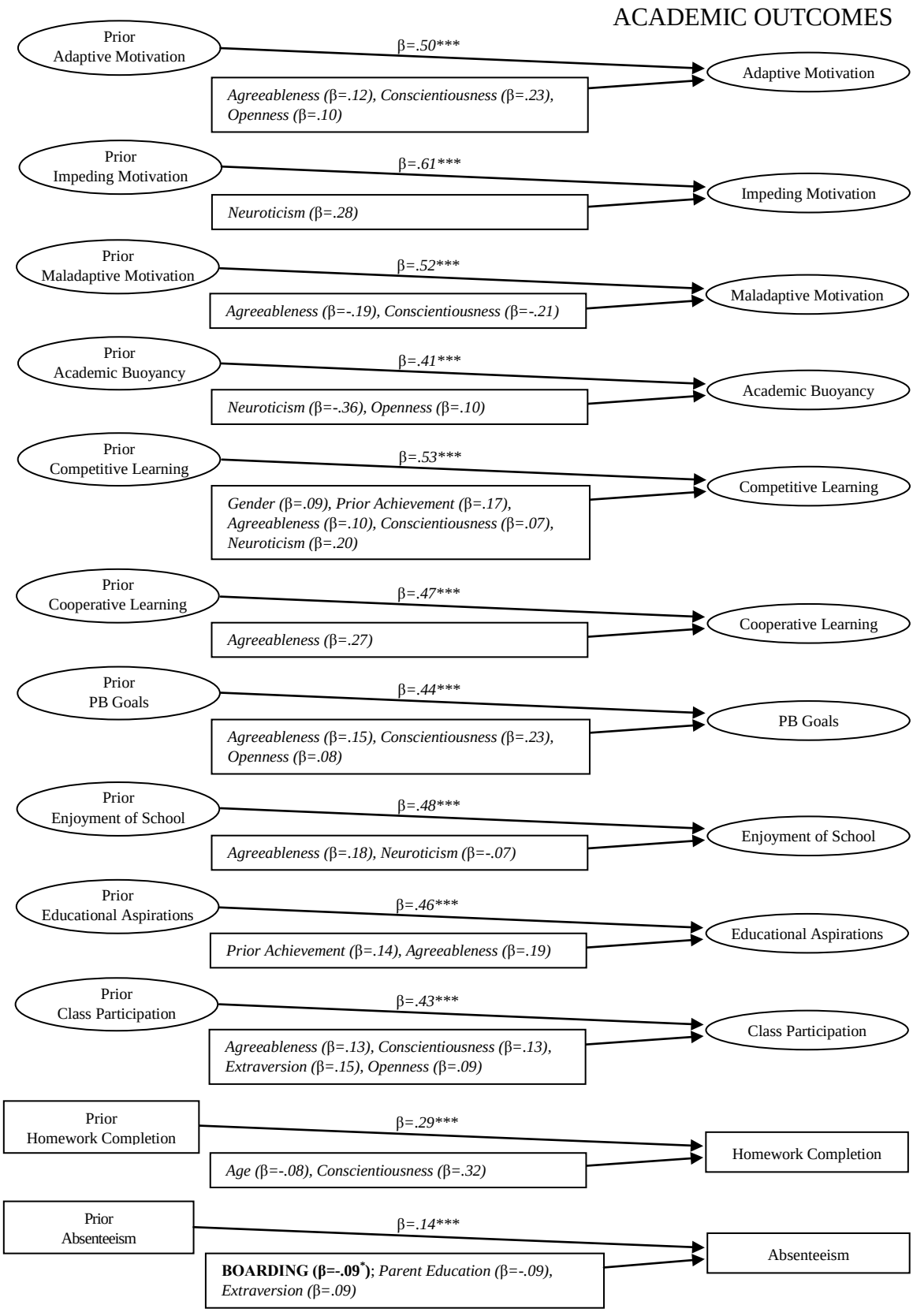

Figure 7.1. Final (Step 6) Longitudinal empirical structural model (standardised parameter estimates, β) for academic outcomes. Fit: CFI = .91 and RMSEA = .035. All paths reported for covariates are significant at $p < .001$.

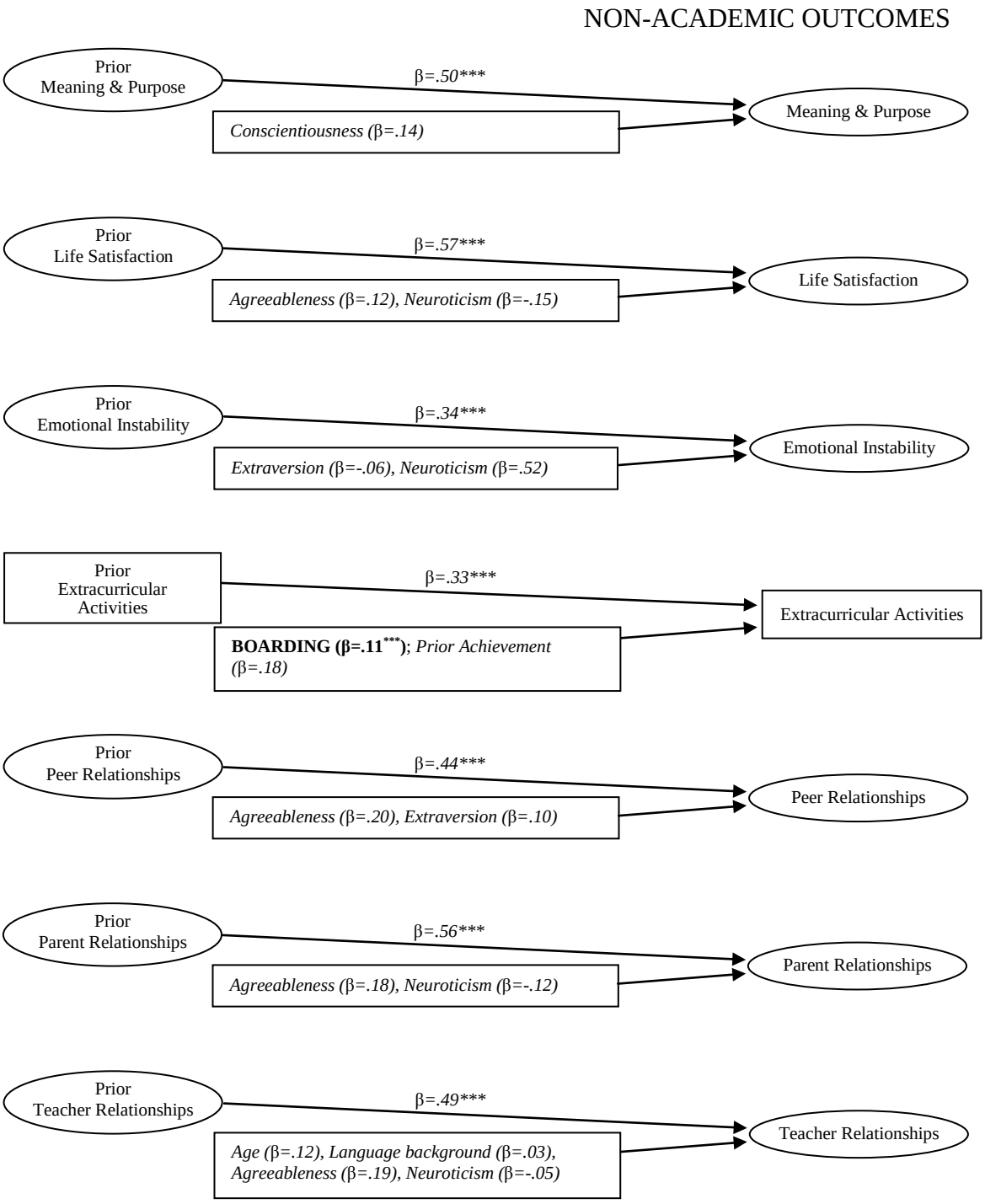

Figure 7.2. Final (Step 6) Longitudinal empirical structural model (standardised parameter estimates, β) for non-academic outcomes. Fit: CFI = .91 and RMSEA = .035. All paths reported for covariates are significant at $p < .001$.

7.4.7 Explained variance at each successive step.

While the standardised beta results provide an indication of the size of effect a factor has on an outcome, the explained variance (R^2) provides an indication of the contribution explained by the addition of that factor to the model. The proportion of variance explained at Step 1, when only student type (day/boarding status) was included in the model, ranged from 1% to 2%. At Step 2, when prior variance was included along with student type, the amount of variance explained increased to between 16% to 55%. Step 3 added socio-demographic factors to prior variance and student type, with this model explaining 17% to 57% of variance. Step 4 added prior achievement to the previous model to account for between 21% to 58% of the difference observed and an increase in explained variance of a number of outcomes. The next step, Step 5, also included personality to factors from Step 4 and the amount explained increased to between 23% to 67% of variance. Finally, the full model (Step 6) again saw between 23% to 67% of variance explained with little change due to the inclusion of school-level factors. Comparison of explained variance at each step in the hierarchical analyses shows that very little variance in the model is explained by student type alone, but a greater proportion of variance is explained when prior variance of Time 1 outcomes is added to the model. Further variance, but to a lesser extent, is also explained by the addition of prior achievement and personality.

Considering all of the steps of longitudinal analyses together, multivariate modelling that controlled for prior variance, shared variance and adjustments for clustering of students within schools, has provided evidence that Time 1 outcomes and personality play a significant role, and to a lesser extent gender, age, language background, and parents'/guardians' education and prior achievement also explained

academic and non-academic outcomes. Of importance to this study, while student type initially seemed to predict a number of these outcomes (at Step 1), student type only significantly predicted one academic (e.g., absenteeism; $\beta = -.09$, $p < .05$) and one non-academic outcome (e.g., ECA; $\beta = .11$, $p < .001$) after controlling for Time 1 outcomes, socio-demographic, prior achievement, personality and school-level factors in the full, hierarchical model (Step 6). Again, these results reinforce an overall picture of parity between day and boarding students once appropriate covariates and autoregression are accounted for.

7.4.8 Longitudinal interactions predicting gains or declines.

In the same way that cross-sectional interactions were investigated, the current study also investigated the effects of longitudinal interactions by considering whether gains or declines in outcomes occurred as a function of any interaction between student type (day/boarding status) and the covariates; that is, whether any gains or declines due to student type are moderated by any covariates. Interactions between student type and each of the socio-demographic, prior achievement, personality, and school-level factors were assessed (e.g., student type × gender, student type × age, student type × parent education, student type × language background, student type × Aboriginality, student type × school structure, student type × agreeableness etc. across 19 dependent measures) resulting in 266 interaction terms. Of the 266 possible interaction effects, three yielded significant results (at $p < .001$). For peer relations, one interaction was significant; that being student type × agreeableness ($\beta = .38$, $p < .001$, such that day students who were more agreeable reported higher peer relationships). For school enjoyment, one interaction was significant; that of student type × school-average achievement ($\beta = .29$, $p < .001$, such that day students at schools of higher school-average achievement reported

greater enjoyment of school). For parent relations, one interaction was significant; that of student type × school-average achievement (β = .16, $p < .001$, such that day students at schools of higher school-average achievement reported higher parent relationships). Thus, there are relatively few interaction effects (consistent with Time 1 and Time 2) and this further highlights the contribution of main effects in the longitudinal data.

7.4.9 Subsidiary analysis.

To investigate whether boarders are changed by the experience when they start or within their first year of attending boarding school, subsidiary analysis was conducted to compare the longitudinal outcomes of boarding students who had just commenced boarding (n = 231) against day students across the longitudinal study. These students were surveyed prior to commencement at their respective boarding schools and then as part of the Time 2 sample. The SEM for this analysis was based on the full model and yielded an acceptable fit to the data (χ^2 = 11,863, df = 4,027, RMSEA = .035, CFI = .91). After taking into consideration all predictors and counterpart Time 1 covariates, there were no significant differences found between day and boarding students on 16 of 19 outcomes measured. In cases where there was a significant difference in the initial year of boarding, boarders scored higher than day students on parent relationships (β = .06) and enjoyment of school (β = .05) and lower than day students on absenteeism (β = -.08) (all βs are significant at $p < .05$). Therefore, subsidiary analysis found that there were no negative effects of attending boarding school and that students come into boarding school at a certain level on the outcomes measured and generally stay that way over the course of their first year; however, where change in outcomes does occur, they tend to be positive, albeit small in magnitude (cf. Keith, 2006).

7.4.10 Noteworthy covariate factors.

While the primary focus of this research is to examine the role of attending boarding school on academic and non-academic outcomes, it is worth highlighting the significant effect (at $p < .001$) of a number of key socio-demographic factors and prior achievement on these outcomes too (see Tables 7.5 and 7.6). In terms of *gender* (1 = female, 2 = male), boys scored higher than girls on competitive learning (β = .09). In terms of *age*, younger students scored higher on homework completion (β = -.08) whereas older students indicated they had a better relationship with their teachers (β = .12). *Language background* was a positive predictor of teacher relationships (β = .03) and *parents'/guardians' education* was a negative predictor of absenteeism (β = -.09). *Prior achievement* was a positive indicator of competitive learning (β = .17), educational aspirations (β = .14), and participation in ECAs (β = .18).

Also of note, personality factors were seen to account for significant variance in student outcomes. Significant at $p < .001$, *agreeableness* had an effect on a greater number of academic and non-academic outcomes compared with the other personality traits, positively associated with adaptive motivation (β = .12), competitive learning (β = .10), cooperative learning (β = .27), PBs (β = .15), enjoyment of school (β = .18), educational aspirations (β = .19), class participation (β = .13), life satisfaction (β = .12), peer relationships (β = .20), parent relationships (β = .18), and teacher relationships (β = .19), and negatively associated with maladaptive motivation (β = -.19).

Conscientiousness (significant at $p < .001$), was positively associated with adaptive motivation (β = .23), competitive learning (β = .07), PBs (β = .23), class participation (β = .13), and meaning and purpose (β = .14), strongly associated with

homework completion (β = .32) but negatively associated with maladaptive motivation (β = -.21).

Also significant at $p < .001$, *extraversion* was positively associated with class participation (β = .15) and peer relationships (β = .10), but negatively associated with absenteeism (β = -.09) and emotional instability (β = -.06). *Neuroticism* (significant at $p < .001$), was positively associated with impeding motivation (β = .28) and competitive learning (β = .20), strongly associated with emotional instability (β = .52), and negatively associated with academic buoyancy (β = -.36), enjoyment of school (β = -.07), life satisfaction (β = -.15), parent relationships (β = -.12), and teacher relationships (β = -.05). Also worth highlighting was the role of *openness* (significant at $p < .001$) on academic and non-academic outcomes, found to be positively associated with adaptive motivation (β = .10), academic buoyancy (β = .10), PBs (β = .08), and class participation (β = .09).

7.5 Chapter Summary

Investigation of longitudinal (Time 1—Time 2) data again assessed the reliability of data, invariance of measurement across key sub-groups, and testing the data against the hypothesised longitudinal model. As at Time 1 and Time 2, analyses demonstrated that the data were normally distributed and scales were reliable, that the measurement properties were well supported, and that the factor structures were invariant across groups. Based on this evidence, it was deemed justifiable to pool these groups for whole-sample analyses and conduct CFA and SEM of the hypothesised longitudinal model. Correlational analysis again revealed preliminary support for the hypothesised model and provided an indication of relationships between student type, covariates, and outcome factors. Finally, structural equation

modelling was again used to test the hypothesised model against the data. This confirmed that the model fit the data well.

This modelling, which comprised the appropriate controls for shared variance (among covariates and outcome variables) and adjustments for the clustering of students within schools, identified few significant relationships between day/boarding status and students' academic and non-academic outcomes. In the main, then, the findings in relation to day/boarding status were of general parity. However, where significant effects emerged, they tended to favour boarding students. Inspection of standardised betas for Steps 1 to 6 of the SEM analyses shows that prior variance of counterpart outcomes and personality traits mostly account for academic and non-academic outcomes. To a lesser extent age, gender, language background, and prior achievement also affect outcomes. The following chapter now discusses findings from Time 1 and Time 2 cross-sectional and Time 1—Time 2 longitudinal analyses.

CHAPTER 8: DISCUSSION

8.1 Introduction

Although boarding is an important part of many students' lives, there has been little study that has sought to assess the effects of boarding school on academic and non-academic development. This research appears to be the first boarding school study to conduct large-scale, multivariate modelling, including a range of covariates known to be associated with developmental outcomes of students, in relation to motivation, engagement, and psychological well-being. Thousands of students were in the "treatment group" (boarders) and thousands were in the "comparison group" (day students). These students were located in the same schools and the same classrooms, received the same instruction from the same teachers, and were 'crossed' with grouping factors (e.g., gender, year-level, language background, parents'/guardians' education, etc.).

This chapter discusses the answers to the study's research questions, the significant and non-significant findings relevant to salient theories and perspectives, and implications for key groups involved in boarding—boarding school administrators, boarders, and parents. A number of contentions regarding the possible positive or negative role of boarding school are also discussed. Limitations of the current study and suggestions for future boarding school research are then presented.

8.2 Overview of Central Aims and Purpose of the Study

The central aim of the current investigation is to examine the role of boarding school in students' academic and non-academic outcomes. For a significant number of students in Australia, boarding is a necessity due to distance from suitable schools or lack of resources in remote or regional areas. For other students, attending

boarding school represents a choice and access to greater educational resources. In recent times, Australia has seen a decline in the number of regional and remote students attending metropolitan boarding schools, while at the same time a significant increase in the number of students from metropolitan areas and from overseas attending these boarding schools (MacGibbon, 2011; Nguyen-Emmett, 2013). Proponents of boarding school have suggested that it is a positive experience for many students that adds value and advantages students academically and non-academically (e.g., Cree, 2000; Lawrence, 2005; Sillitoe, 2010; TABS, 2013; White, 2004a). Other commentators have contended that boarding affects students negatively and recreates stereotypical constructions of gender or social status (e.g., Chase, 2008; Connell & Messerschmidt, 2005; Cookson & Persell, 1985; Duffell, 2000; Finn, 2012; Gaztambide-Fernández, 2009a; Poynting & Donaldson, 2005). Regardless of the reasons why students board, it is important to assess these contentions and whether the academic and non-academic outcomes of day students and boarders differ.

As discussed in Chapter 2, previous theorising about the role of boarding in students' outcomes is relatively limited. For this reason, the current study traversed a broad range of theories and perspectives in order to better understand what influences may be operating on students and within the boarding environment, and to identify factors that may affect academic and non-academic outcomes and be different to those that influence day students. An underlying aim of this research is to provide an overview of some of the key theoretical perspectives that might frame a study of the role of boarding school, but it is in no way intended to be exhaustive of perspectives that might be applied to this educational context. Taken together, the theories and perspectives outlined in Chapter 2 highlight the important role that the

individual and ecological context play, especially relationships and experiences these contexts afford in shaping the academic and non-academic outcomes of youth. Schools (and boarding schools within them) are examples of such contexts. These different perspectives provided a viewpoint from which to frame and then to interpret the results of this study. The comprehensive nature of the perspectives and theories traversed suggest that the role of boarding school may be positive, negative, or neutral in terms of students' academic and non-academic outcomes. They also suggest that its role may differ as a result of particular background attributes of individual students that each student may bring to the experience.

As yet, there have been few studies that have endeavoured to comprehensively measure the academic and non-academic implications of attending boarding school for a large sample of students, across a large number of schools, juxtaposing the results of day students and boarders, while longitudinally controlling for prior variance. Considered together, the range of possible influences on the academic and non-academic outcomes of day students and boarders, as well as the theoretical and empirical perspectives that may help to better interpret the results of this study, highlights the complex nature of the boarding experience. As a result, the aim of this research is to disentangle the factors that influence the experience of boarders and assess the extent to which they affect their academic and non-academic outcomes.

8.3 Answering the Study's Research Questions: Cross-sectional and Longitudinal Data

Given the contested perspectives identified in earlier chapters, and the generally fragmented nature of research to date, the current study aims to answer the following research questions. First, do day students and boarders differ significantly

in terms of background or demographic characteristics (e.g., covariates such as gender, age, language background, Indigenous cultural background, parents'/guardians' education, prior achievement, or personality)? This is important to know as these characteristics may affect student outcomes, thereby confounding any student type effects. Second, do day students and boarders differ significantly in terms of academic and non-academic outcomes when viewed cross-sectionally (i.e., at Time 1 and Time 2 as distinct phases)? Third, do day students and boarders gain or decline in terms of academic and non-academic outcomes to different extents when viewed longitudinally (i.e., across Time 1 and Time 2)? Lastly, what role do covariates and prior achievement play in moderating the relationships between student type on academic and non-academic outcomes? The answers to these questions and results of the study are now summarised.

8.3.1 Summary of Time 1 findings.

For Time 1 outcomes, after controlling for socio-demographic factors and prior achievement: (a) there were no significant differences between day and boarding students in 13 out of 19 academic and non-academic outcomes; (b) in two of the 12 academic outcomes (i.e., impeding motivation and academic buoyancy), boarders scored higher than day students; (c) in four of the seven non-academic outcomes (i.e., meaning and purpose, life satisfaction, parent relationships, and participation in ECAs), boarders also scored significantly higher than day students; (d) of the 266 possible interaction terms examined (i.e., 14 covariates × 19 outcomes), only two yielded significant relationships with outcomes (*viz*. meaning and purpose with student type × language background and life satisfaction with student type × school structure); and (e) the bulk of variance, it appeared, was accounted for by key socio-demographic factors (e.g., age and gender), prior student

achievement, and personality. These results reveal that some significant differences exist in the outcomes of day students and boarders; however, the main effects of student type, socio-demographic, personality, and school-level factors explain a greater proportion of variance. In summary, for Time 1 results, once socio-demographic, prior achievement, personality, and school-level factors were taken into consideration, in some instances boarders demonstrated more positive outcomes than day students, but the overall picture was one of parity.

8.3.2 Summary of Time 2 findings.

For Time 2 outcomes, after controlling for socio-demographic factors and prior achievement: (a) there were no significant differences between day and boarding students in 10 out of 19 academic and non-academic outcomes; (b) in four of the 12 academic outcomes (i.e., adaptive motivation, impeding motivation, academic buoyancy, and PBs), boarding students scored higher than day students and also scored lower on absenteeism; (c) in four of the seven non-academic outcomes (i.e., meaning and purpose, life satisfaction, parent relationships, participation in ECAs), boarders also scored significantly higher than day students; (d) of the 266 possible interaction terms examined (i.e., 14 covariates × 19 outcomes), five yielded significant relationships with outcomes (*viz*. peer relationships with student type × agreeableness, cooperation with student type × agreeableness, teacher relationships with student type × openness, parent relationships with student type × Aboriginality and student type × conscientiousness); and (e) the bulk of variance, it appeared, was accounted for by key socio-demographic factors (e.g., age, gender, parents'/guardians' education) and prior student achievement, and to a lesser extent personality factors. Again, these results suggest that some significant differences exist between day students and boarders in outcomes; however, the main effects of

student type, socio-demographic, personality, and school-level factors explain a greater proportion of variance. In summary, for Time 2 results, once socio-demographic, prior achievement, personality, and school-level factors were accounted for, the role of boarding school appears to be positive where differences exist, and predominantly on par with day school on all other measures.

8.3.3 Summary of longitudinal findings.

The longitudinal research question aims to identify whether day students and boarders gain or decline in student outcomes to differing degrees over the course of a year. After controlling for socio-demographic factors, prior achievement, personality, and prior variance in outcome measures, the following results were obtained: (a) there were no significant differences in gains or declines between day and boarding students in 17 out of 19 academic and non-academic outcomes; (b) in one of the 12 academic outcomes (i.e., absenteeism), boarding students showed greater declines than day students; (c) in one of the seven non-academic outcomes (i.e., participation in ECAs), boarding students gained more than day students; and (d) the bulk of variance, it appeared, was accounted for by prior Time 1 outcomes and personality factors, and to a lesser extent by key socio-demographic factors (e.g., age, gender, language background, parents'/guardians' education) and students' prior achievement. Inclusion of prior variance in Time 1 outcomes in the longitudinal model accounted for between 16% to 55% of variance in day and boarding students' outcomes as opposed to between 1% to 2% of variance as a function of student type alone.

A number of pre-existing (or "initial") differences in attributes of both day students and boarders were identified (see Research Question 1) and accounted for in the final longitudinal model, thus enabling the effects of socio-demographic, prior

achievement, and personality factors to be disentangled from variance due to attending boarding school. For example, on average, boarders tend to be older than day students, more likely to come from a NESB, have lower prior achievement, have parents/guardians whose level of education is lower than day students' parents/guardians, and were significantly different in key personality traits in comparison with day students. Therefore, after taking into consideration prior variance, socio-demographic, prior achievement, personality and school-level moderators, the gains or declines of boarders do not appear to be significantly different from those of day students in the majority of academic and non-academic outcomes. However, on those outcomes where a significant gain/decline was found (i.e., lower absenteeism and greater participation in ECAs), it tended to favour boarders. Subsidiary analysis of boarders in their first year of boarding indicated that there were no negative effects of attending boarding school on academic and non-academic outcomes, that students come into boarding school at a certain level in the outcomes measured and generally stay that way over the course of their first year; however, where change in academic and non-academic outcomes does occur, these tend to be positive for boarders.

In summary, the results suggest general parity between day and boarding students in terms of gains or declines on the majority of academic and non-academic outcomes. That is, boarders do not gain or decline in these outcomes to a different extent when juxtaposed with day students in the same schools. It would appear that much of the difference in academic and non-academic outcomes is in fact explained by prior variance in these outcomes or personality factors and some socio-demographic attributes.

8.3.4 Preliminary and subsidiary validation of instrumentation.

A preliminary and subsidiary aim of this study was to also consider the psychometrics underpinning substantive models used to answer the research questions outlined above. Evidence from Time 1, Time 2, and matched Time 1—Time 2 data regarding skewness, kurtosis, and standard deviations generally suggested that scales were normally distributed. The internal consistency of items for each of the academic and non-academic scales was assessed by calculating reliability coefficients (Cronbach's alpha), which found that factors in the cross-sectional and longitudinal studies displayed acceptable to excellent levels of reliability. Measurement invariance across key sub-groups was tested via multi-group CFAs to demonstrate invariance as a function of student type (i.e., day/boarding status), gender, language background, Aboriginality (Indigenous status), school year-level, and Time 1—Time 2 matched and unmatched groups. These results sought to provide evidence that the measurement properties (i.e., factor loadings, correlations, variances, and residuals/uniquenesses) were invariant across the key groups of the study. In general, this testing demonstrated no significant variance in the measurement properties of key sub-groups and provides support for aggregating the data and analysing the hypothesised model using the cross-sectional and longitudinal sets of data. The results of these subsidiary analyses confirm the reliability of the cross-sectional and longitudinal models used to answer the research questions outlined previously.

8.4 Noteworthy Significant and Non-Significant Findings

Given the somewhat negative history and contentions about the influence of attending boarding school, it is posited that non-significant findings can be just as important as significant findings. In general, in the outcomes measured, it would

appear that for the typical boarder, boarding school does not cause “harm”; their academic and non-academic outcomes are similar to those of day students. Analysis of the longitudinal data suggests a number of effects and patterns—notably, general parity of gains and declines in the outcomes of day students and boarders. Indeed, Blimling’s (1999) meta-analysis similarly found that when studies controlled for differences in prior academic performance, there were no negative effects of boarding on college students’ academic performance. In addition, when cross-sectional results are considered, it appeared that where significant differences arise in the academic and non-academic outcomes of day students and boarders, results tended to modestly favour boarders.

Comparison of the attributes of day students and boarders highlights significant profile differences of those likely to be day students and those likely to be boarders. While these background or demographic differences were accounted for as covariates in SEM, they are worth reiterating as they show how day students and boarders differ in initial characteristics. For example, as noted, on average, boarders tend to be older than day students, have lower prior achievement, have parents/guardians whose level of education is lower than day students, and show significant differences in key personality traits in comparison with day students (e.g., lower in agreeableness and openness to experience and higher in neuroticism). Indigenous and NESB students were also more likely to board than be day students at the schools sampled.

This would suggest that certain types of students tend to board. It may also suggest that parents may consciously or unconsciously board students who are perceived to have a “need” to board, will “cope” better, or are more likely to be successful at meeting the academic and social challenges of this experience. The

results of this study indicate that various covariates were significantly associated with student type (discussed below), and once controlled, affected the pattern of results. For example, when not controlled, the longitudinal results indicate that boarders scored higher on less favourable outcomes (e.g., impeding motivation, maladaptive motivation) and lower on more favourable outcomes (e.g., cooperative learning, homework completion, educational aspirations, peer relationships). In contrast, once covariates were controlled, day students and boarders were not significantly different on these outcomes. This would suggest that greater variance was due to covariates and prior variance in outcomes and that initial differences were due to differences in attributes of day students and boarders.

As noted, cross-sectional analysis revealed predominant parity between day and boarding students, and that where significant differences emerged, they tended to favour boarders: at Time 1 boarders scored higher than day students on academic buoyancy and on meaning and purpose, life satisfaction, parent relationships, and participation in ECAs. At Time 2, in addition to the significant differences observed at Time 1, boarders also scored higher than day students on adaptive motivation and PBs and lower on absenteeism.

The study also aimed to identify whether day students or boarders gain or decline in academic and non-academic outcomes over time, in order to more fully understand the role of boarding. The overarching finding of longitudinal analyses was general parity in terms of gains and declines in motivation, engagement, and well-being of day students and boarding. On two outcomes boarders showed lower absenteeism and greater participation in ECAs than day students over the course of the study. Hence, attending boarding school generally appears to provide boarders the same level of access to and opportunities for academic and non-academic success

as their day school counterparts. In addition, subsidiary analysis comparing boarders in their first year and the year prior to attending boarding school suggests that some positive growth occurs in this first year and therefore subsequent years seem to sustain (not increase nor decrease) this change. This analysis indicated that in their first year boarders show lower absenteeism, higher levels of enjoyment of school, and more positive relationships with parents.

While the significant findings provide useful answers to the research questions listed previously, non-significant findings are also useful to help better understand the role of boarding school. As noted in Chapter 2, family, peers, and other caring adults such as teachers play an important role in the social and emotional development of young people. Potential loss and separation from important family assets due to students residing away from home and at boarding school is a real concern and one which may be postulated to affect a range of academic and non-academic outcomes. Indeed, a number of authors and researchers have suggested that boarding school may have negatively affected students in the past (e.g., Barton et al., 2005; Duffell, 2000; Elias et al., 2012; Smith, 2010). For example, it has been contended that attending boarding school may negatively affect a student's relationship with parents and psychological well-being (e.g., Duffell, 2000). However, the longitudinal results of the current study indicate that day students and boarders did not differ significantly in terms of relationships with parents (or peers or teachers) and did not differ in a range of well-being measures (life satisfaction, meaning and purpose, emotional stability).

Historical accounts suggesting that boarding school may adversely affect Indigenous students (e.g., Barton et al., 2005; Elias et al., 2012; Hirshberg, 2008; Pember, 2007; Smith, 2010) and contentions that boarding schools are gendered

institutions (e.g., Chase, 2008; Connell & Messerschmidt, 2005; Poynting & Donaldson, 2005) can be tested through interaction effects. These contentions were investigated in the current study by examining whether interaction effects of student type and covariates—such as gender (e.g., student type × gender)—were more likely predictors of academic and non-academic outcomes than main effects of student type (i.e., day or boarding student). Interaction effects were largely non-significant, yielding only three significant longitudinal effects, none of which included SES, Indigenous cultural background, or gender (discussed further below). Thus, in contrast to much prior commentary, it appears that particular groups were not disadvantaged by boarding school.

The non-significant boarding findings of the longitudinal study also highlight the greater importance that factors such as age, gender, SES, personality, and prior achievement play—as main effects—in students' academic and non-academic lives. That is, the effects of gender, socio-economic background, influences of the family, and prior achievement acting across their lifespan appear to have a greater and more sustained influence on students' academic and non-academic gains/declines across time than student type (day/boarding status) alone. For many parents, non-significant findings (hence parity on many academic and non-academic outcomes) may be deemed a helpful finding. This suggests that boarders are not disadvantaged relative to day students. Indeed, they trend similarly in terms of academic and non-academic outcomes. Therefore, boarding school may meet a major objective of many parents and students: to provide access to equitable school outcomes that match their day school counterparts (Lawrence, 2005; Wild & Anderson, 2007).

8.5 A Closer Look at Boarding School Results

The following section explains major findings and revisits theory and applied research presented in Chapter 2 with a view to better understanding the phenomenon of boarding school. Longitudinal results of the study are emphasised as these are underpinned by a more robust set of analyses that controlled for socio-demographic factors, personality, prior achievement, school-level factors, and prior variance in outcome measures. Notwithstanding this, where appropriate, relevant cross-sectional results are discussed. Given that students' unique set of personal attributes plays an important role in developmental outcomes, the role of covariates and interaction terms is also discussed.

8.5.1 Boarding and academic outcomes.

Although there was mostly parity between day students and boarders from a longitudinal perspective, there were two significant differences. It terms of academic outcomes, boarders and day students differ significantly in terms of absenteeism. The finding that boarders were less absent from school than day students is not surprising given that they reside at the school during school time and there are various systems and structures in place to ensure attendance. Therefore, it may be that the academic lives and influences on boarders are more similar to that of day students, whereas their after school or non-academic life is more dissimilar. For the greater part of each day, boarders and day students share the same classrooms and are under the same academic expectations of classroom teachers. Where the academic environment crosses over into the boarding environment (e.g., homework, assignments, and revising for examinations), much of the expectations and outcomes are driven by the teacher or coursework common to day students. That is not to say boarding houses, boarding staff, and parents do not play a salient role in setting academic expectations,

supervising the completion of these academic tasks, and providing ongoing academic support and guidance. There may well be a distinct boarding school/house academic climate as suggested by Cree (2000), but collectively this does not appear to have a more profound influence than what students are exposed to from the day school context. The parity in gains and declines of academic outcomes also suggests that, given boarders (on average) start from behind day students on a range of factors, it seems they track along similar developmental lines over time. This may be because academic expectations during the day at school are reinforced at the boarding house level. It may be because a positive academic culture exists in the boarding house. Further research in this area is needed to identify what it is about the boarding experience that may affect boarding in these ways. In any case, it seems that the boarding experience provides access to various resources, beyond a student's unique background, to affect equitable pathways alongside day students.

Given pre-existing (often negative) differences in attributes of boarders in comparison to day students, it may be that boarding offers greater out-of-class access to educators and additional professional educational input (see TABS, 2013), which results in predominantly equitable effects on academic outcomes. One potentially useful perspective is that their academic benefits may be similar to those of tutoring, in which the involvement of educational professionals has been found to be more effective than the involvement of non-professionals such as parents (Slavin, Lake, Davis, & Madden, 2011). Typically, parents have no great expertise in academic study and curriculum and may not be able to assist their child as much as educational professionals. It may be that the boarding house or boarding school promotes a particular academic environment that challenges and supports students academically (e.g., TABS, 2013). As extracurricular activity (e.g., Fredricks & Eccles, 2005) or

PYD (e.g., Benson, 2011; Benson, Scales, Hamilton, & Sesma, 2006; Blum, 2003; R. Lerner, Lerner, von Eye et al., 2011) approaches might suggest, interactions with prosocial professional adults may provide access to positive assets or influences that compensate for boarders being away from the family. An experiential education perspective (Gass, 2003; Kolb, 1984; see also Larson, 2006) would emphasise the developmental yields to individuals for being in environments that challenge the learner (Itin, 1999)—a role that educational staff in the boarding house may also perform as well as or perhaps better than parents.

8.5.2 Boarding and non-academic outcomes.

In terms of non-academic outcomes, the longitudinal findings suggest general parity between day students' and boarders' gains and declines in these measures. In this domain, boarders only differed significantly to day students in one area: participation in ECAs. As is the case for absenteeism, given that boarders live on-site at the school, involvement in school-based ECAs is optimised (MacGibbon, 2011; Nguyen-Emmett, 2013). The findings that boarders scored on measures of psychological well-being—meaning and purpose, life satisfaction, emotional stability—commensurate with that of day students, is of particular interest given the sometimes negative history of boarding. It may be that the contemporary boarding experience is different from that of the past (Duffell, 2000; Barton et al., 2005; Elias et al., 2012; Trimingham Jack, 2003). It has been suggested that boarding houses are increasingly homely, provide greater access to family and opportunities to go on leave from school (MacGibbon, 2011; Nguyen-Emmett, 2013; Wheare, 2006). This, it has been contended, makes boarding life more enjoyable and allows boarders to remain more connected to important social and psychological assets than may have

been the case in the past (Bowlby, 1952; Lynch, 1998; Ronen & Seeman, 2007; Scott & Langhorne, 2012; Voyer, 2007).

Alternatively, as noted above, it may be that boarders now have ongoing access to trained educators after school hours thereby providing them with opportunities for pastoral development that is within the expertise and remit of such professionals (see Hawkes, 2010a, 2010b). For example, it is now the case that school staff receive professional development on the social-emotional needs of students (see Hawkes, 2010b), whereas it is not the case that parents receive specific training in such aspects of adolescent development; in comparison, parents are relative novices at most stages of their child's social-emotional development (Becker & Luthar, 2002; Martin & Dowson, 2009).

It is also very interesting to note the findings for boarders in terms of parent-child relations. It would appear that boarders enjoy the same levels of positive relationships with parents as do their day student counterparts, even though they reside away from home for much of the school year. This may not be surprising given that the majority of students in the study, both boarders and day students, were adolescents and attachment theory would suggest that this is a natural time of separation from parents (e.g., Ainsworth, 1989; Allen & Manning, 2007; Berndt & Keefe, 1995; Freeman & Brown, 2001; Gorrese & Ruggieri, 2012; Scott et al., 2011). Security of attachments is formulated earlier in life (prior to boarding school for most students) and because of this, both the day student and boarder may have quality of relationships with parents that are on par with each other (see outline of attachment patterns in Appendix B). The contemporary reality of boarding school is one of greater access to family and the outside world (see Cree, 2000; Wheare, 2006; White, 2004a). There is presently much greater access to family via modern

communications (e.g., mobile telephones, email, Skype, social networking) and due to flexible arrangements for boarding (e.g., full boarding, weekly or flexi-boarding, day boarding) that allow students to return home on a regular basis (see, for example, White, 2004a). Boarders also have much greater opportunity to go on leave from the boarding school with family, guardians, or friends, and generally there are few restrictions on the number of weekends allowed out (e.g., Wheare, 2006). Therefore, parity in these outcomes may not be entirely unexpected and previous contentions about the negative effects of boarding on non-academic outcomes such as psychological well-being or interpersonal relations were not substantiated by the current study.

8.5.3 Moderation of covariates—interaction effects.

Alongside modelling student type (day/boarding status) as a main effect, the current study also investigated whether student type effects were moderated by socio-demographic, prior achievement, and personality factors. In Chapter 2, it was speculated that some factors (e.g., age, SES, Indigenous cultural background) may yield distinct effects for boarding students more than day students (see Marsh et al., 2006; Martin, 2007; McInerney, 2000; OECD, 2006; Thompson et al., 1988). However, the results indicate on most counts that student type was not moderated by these other factors. Of 266 possible interaction terms (i.e., 14 covariates × 19 outcomes) assessed at each cross-sectional stage, in only two cases at Time 1 and five cases at Time 2 were significant interaction effects derived beyond the main effects. Similarly, in terms of possible longitudinal interactions predicting gains or declines in outcomes, only three yielded significant results. Based on the current study, it seems that where student type was seen to contribute to outcomes, these

tend to be main effects and not moderated by covariates such as socio-demographic, prior achievement, and personality factors.

8.5.4 Importance of covariates.

The current investigation highlights the importance of including covariates in a study of academic and non-academic outcomes. Correlational analysis indicated that various covariates were significantly associated with student type (i.e., day/boarding status). This was also the case for SEM when student type was the only factor used to predict academic outcomes. In each of these analyses, there were instances where bivariate relationships between student type and outcomes suggested negative results for boarding school. Importantly, however, when multivariate modelling was used to assess student type, controlling for covariates and shared variance among outcome variables showed that many of these effects shifted to parity, with some boarding school results moderately positive. Given the "cultural baggage" that all students bring with them to the schooling experience (see Connell, 1993; Gale, 2011; Rawls, 1999), this study was able to assess the unique contribution of boarding school so as not to confuse its role with effects due to other background characteristics and, at the same time, was able to assess the unique contribution of these covariates to students' outcomes after controlling for the contribution of student type.

8.5.4.1 Importance of covariates in educational research.

In the first instance, the direct effects of covariates are purged of the contribution to outcomes of student type. Although not the central aim of this thesis, clearly once more the inclusion of student type is useful and of interest to educational research more broadly as it allows the unique effects of socio-demographics to be determined after partialling out any variance attributable to student type. A number

of covariates were found to more consistently affect students' academic and non-academic outcomes. In the current study, the longitudinal results indicate that age, prior achievement, and personality were significant predictors of student outcomes, over and above the contribution of student type, other covariates, and prior variance.

Previous research has shown that older students generally decline in a range of academic and non-academic measures; for example motivation and engagement (Martin, 2007, 2009a), academic buoyancy (Martin & Marsh, 2006, 2008a), and breadth of ECA participation (see Côté, 1999; Fredricks & Eccles, 2006b). In the present study, older students tended to be significantly higher in a number of academic outcomes (e.g., adaptive motivation, enjoyment of school) and non-academic outcomes (e.g., life satisfaction, peer relations, teacher relations) while lower in homework completion. Age was not seen to be a significant influence on other outcomes such as impeding motivation, maladaptive motivation, academic buoyancy, or participation in ECAs. These findings may be because personality was found to have a more significant role in students' outcomes than age, which was not accounted for in previous studies.

In terms of students' prior achievement (i.e., literacy and numeracy scores), those higher in prior achievement were also found to be higher on a range of academic (e.g., adaptive motivation, competitive learning, educational aspirations) and non-academic outcomes (e.g., ECAs). This is generally consistent with prior research that finds prior achievement to be a key predictor of achievement-related behaviours (e.g., Hattie, 2009), adaptive motivation (e.g., Martin, 2007), and well-being (e.g., Quinn & Duckworth, 2007).

Finally, previous research has shown personality factors to be important in the development of academic and non-academic outcomes (e.g., Busato et al., 1999;

de Raad & Schouwenburg, 1996). For example, conscientiousness and agreeableness have been found to positively predict adaptability and neuroticism to negatively predict adaptability, over and above variance that could be explained by socio-demographics and students' prior achievement (Martin et al., 2013). Similarly, recent research has found personality (e.g., conscientiousness, extraversion, neuroticism, and openness) to positively predict variance in students' motivation and engagement, students' attendance at school (see Judge & Ilie, 2002; Komarraju & Karau, 2005; Komarraju et al., 2009; Major et al., 2006), and students' well-being, such as positive affect and negative affect (Costa & McCrae, 1980; see also Fujita, 1991; Lucas & Fujita, 2000) and life satisfaction (Rammstedt, 2007).

The longitudinal results similarly highlight the significant role that a number of personality traits play in students' academic and non-academic outcomes, generally supporting previous research. For example, the current research supports previous findings of the positive influence of conscientiousness on motivation and engagement (e.g., Judge & Ilie, 2002; Komarraju et al., 2009; Major et al., 2006; Martin et al., 2013), the positive role of extraversion in a number of academic and non-academic outcomes, but to a more limited effect, and the positive role of agreeableness in life satisfaction (e.g., Rammstedt, 2007). However, the current study did not find evidence to support previous findings on the role of neuroticism in student attendance (see Komarraju & Karau, 2005), or the role of conscientiousness, extraversion, and openness in life satisfaction (e.g., Rammstedt, 2007). These studies typically conducted regression analysis using scale scores, unlike latent variable based SEM conducted in the present study, and did not account for prior variance in the outcomes measured via a longitudinal design (unlike the current study).

However, the longitudinal results also reveal that a number of covariates had relatively little effect on academic and non-academic outcomes once other covariates, including student type (and also prior variance), were controlled. These included gender, Indigenous cultural background, language background, parents'/guardians' levels education, and school-level factors. That is, the unique contribution of these covariates to a student's academic or non-academic outcomes was generally small and non-significant. The current research is discordant with previous research on the effects of covariates (e.g., Artelt et al., 2003; Lipschitz-Elhawi et al., 2008; Marsh et al., 2008; Martin, 2003, 2007; Martin & Marsh, 2008b; Proctor et al., 2009), which found unique effects of these covariates on a number of academic and non-academic outcomes as, unlike the current study, these studies did not control for autoregression pathways. The current study controlled for prior variance in academic and non-academic outcomes and hence the non-significant effects are as such once the contribution of these outcomes has been partialled out. However, the current research does support previous research showing boys' preference for competitive learning situations (Marsh et al., 2006).

In terms of the role of Indigenous cultural background in the current study, only one significant effect is worthy of note, that of Indigenous cultural background predicting higher meaning and purpose. There were no other significant findings to support disadvantage or negative effects of Indigenous cultural background on the academic and non-academic outcomes of this study (for comparison, see ABS, 2012; Bradley et al., 2008; MCEECDYA, 2008; Martin, 2006a; McInerney, 2000; Wild & Anderson, 2007). Therefore, it would appear that the perceived "gap" in outcomes is not a result of Indigenous cultural background, but other socio-demographic and

geographic factors that might limit access to equitable educational, health, and well-being resources (see Carapetis & Silburn, 2011).

Previous research has found that parents'/guardians' level of education play a role in shaping children's academic outcomes (e.g., Alexander & Entwisle, 1988; Sullivan et al., 2013; Teachman et al., 1997; Thompson et al., 1988; Yeung et al., 2002) and non-academic outcomes (e.g., Entwisle, Alexander, & Olson, 2005; Miech, Essex, & Goldsmith, 2001; Raver, 2004; Werner, 1993; Willingham, 2012). In contrast, the current study found that once covariates and prior variance were controlled, the effect of parents'/guardians' level of education was limited. Significant effects in the current study were found whereby higher levels of parents'/guardians' education influenced lower absenteeism and higher peer relations.

Finally, consistent with Hattie's (2009) conclusion, the current study offers little support to claims that differences in the structures of schools—i.e., single-sex education or co-education—or school-average achievement make much difference to student outcomes when considered in isolation. In sum, then, the current study has important yields for understanding the role of covariates in the academic and non-academic outcomes of students more broadly as the effects can be considered unique effects and purged of the contribution of other covariates, including student type (day/boarding status).

8.5.4.2 Importance of covariates in boarding research.

The direct contribution of student type (day/boarding status) is also purged of the effects of major covariates and prior variance. This is significant as no other study has apparently controlled for such a broad range of factors known to influence academic and non-academic outcomes. That is, the current study was able to

disentangle the influence of boarding beyond those of gender, age, parents'/guardians' level of education, language background, Indigenous cultural background, prior achievement, personality traits, and school-level factors.

A number of examples from the current study are cases in point. For example, boarders tended to be older and in the current study, age was found to be negatively correlated with more favourable outcomes (e.g., academic buoyancy, class participation, cooperative learning, PBs, homework completion, parent relationships) and positively correlated with less favourable outcomes (e.g., impeding motivation, maladaptive motivation, emotional instability, ECA) (see Table 7.2). A simple bivariate analysis (e.g., correlational analysis, or analyses not controlling for covariates such as age) would suggest that boarders, who are typically older, would reflect more negative outcomes. However, after controlling for age (and other covariates) using SEM to purge for shared effects, in many instances the differences between day and boarding students was reduced to parity or tended to favour boarders (see Tables 7.5 and 7.6). Therefore, it was boarders' age (not boarding *per se*) that seemed to be affecting outcomes. Once the effects of age were controlled, boarding status yielded a different (more positive) profile.

Likewise, boarders were found to be lower in prior achievement and, in the current study, prior achievement was positively correlated with favourable outcomes (e.g., adaptive motivation, academic buoyancy, enjoyment of school, educational aspirations, class participation, competitive learning, PBs, homework completion, meaning and purpose, life satisfaction, peer relationships, parent relationships, teacher relationships, ECAs) and negatively correlated with less favourable outcomes (e.g., impeding motivation, maladaptive motivation, absenteeism, emotional instability) (see Table 7.2). However, after controlling for prior achievement (and

other covariates and prior variance) greater parity in the outcomes of day and boarding students was evident via SEM—or in a few instances the outcomes favoured boarders (see Tables 7.5 and 7.6). Therefore, once controlled, it is the role of prior achievement, rather than whether a student is a day student or boarder, that seemed to be affecting these outcomes.

Lastly, boarders tended to be lower in factors such as agreeableness and openness and higher in neuroticism. The current study found more favourable personality traits to be correlated with more favourable outcomes (e.g., agreeableness correlated positively with adaptive motivation) and less favourable personality traits to be correlated with less favourable outcomes (e.g., neuroticism correlated positively with emotional instability) (see Table 7.2). Once again, the longitudinal SEM results that controlled for prior variance and covariates demonstrated that personality traits have a greater effect on academic and non-academic outcomes than student type (day/boarding status) alone (see Tables 7.5 and 7.6). On nearly every measure of academic and non-academic outcomes, personality—agreeableness, conscientiousness, extraversion, neuroticism, and openness—was found to be of greater influence than student type (day/boarding status), with the exception that prior variance in these outcomes was by far the most significant. Hence, once personality was controlled, day students and boarders appear to have very similar gains or declines in academic and non-academic outcomes.

8.5.5 Importance of non-significant findings.

In the context of a sometimes negative history of boarding, the finding of parity between day students and boarders on most outcome measures is noteworthy for parents and educators. The current study provides evidence that day students and boarders achieve similar outcomes in terms of motivation and engagement, academic

buoyancy, enjoyment of school, educational aspirations, and SAL as well as similar outcomes in terms of meaning and purpose, life satisfaction, emotional stability, and relationships with parents, peers, and teachers.

For many parents, their primary concerns are that their child will be happy and receive educational access and opportunities that are comparable to other students in the school (Cree, 2000; Lawrence, 2005; White, 2004a; Wild & Anderson, 2007). It would appear that in terms of academic and social-emotional development there is little difference between day students and boarders. Some students board out of necessity or relative disadvantage due to living in rural or remote geographic regions, while others board for greater stability in their daily routines or for access to specific programs (e.g., sporting or artistic programs; MacGibbon, 2011; Nguyen-Emmett, 2013). According to Lawrence (2005), reasons why parents choose boarding school include access to opportunities (such as ECAs) and a stable and structured learning environment. Indeed, for students, attending boarding school may represent an ideal compromise between the benefits of home and school: an environment that allows them the opportunity to develop independence and provides access to educational resources, while also maintaining relationships with family. For schools, disproportionately positive or negative results for day students or boarders would not be satisfactory as such results would mean that one group of students experienced greater advantage than the other. The present findings suggest that boarders have opportunities and structure that are comparable to that of day students, as is evident from parity in gains and declines of academic and non-academic outcomes and the predominantly non-significant findings outlined above. While some theoretical perspectives (e.g., PYD, attachment) may suggest a potential for greater positive effects of boarding, the lack of variance between

boarders and day students on most measures may suggest that their school and out-of-school lives may be more similar than first assumed. For example, much of the school day for boarders and day students is shared in similar activities (e.g., classwork, sport, socialising with peers, etc.) and so too after school (e.g., homework, sport, socialising with peers, interacting with family), albeit in different environments. This is further considered in Limitations and Directions for Future Research. The misconceptions and contentions presented earlier in this thesis about the role of boarding school do not seem to be founded in the present empirical evidence; the "modern" boarding school experience appears to be different from the experience of boarding schools of the past.

8.5.6 Disconfirming evidence.

Across quite a wide range of academic and non-academic factors, findings suggested that day students and boarders scored at similar levels. Longitudinally, the picture appears to be that day students and boarders have similar developmental patterns and that on all measures (except absenteeism and participation in ECAs) day students and boarders did not gain or decline in academic and non-academic outcomes to differential extents. Where significant differences were evident, they tended to favour boarders. While the experience of some students at boarding schools in the past may not have been positive, this does not seem to be the case in contemporary Australian boarding schools in the present study.

Previous contentions have been raised that attending boarding school may diminish academic performance, parent-child relationships, and cultural identity (e.g., Alexander-Snow, 2010, 2011; Han et al., 2000; Duffell, 2000; Elias et al., 2012; Jack, 2000; McBeth, 1982; Neegan, 2005; Smith, 2010). Boarding has also been criticised for being incubators of power and privilege or promoting forms of

hegemonic masculinity and emphasised femininity (e.g., Chase, 2008; Connell & Messerschmidt, 2005; Poynting & Donaldson, 2005). Another challenging perspective on boarding schools is that which suggests boarding schools act as a total institution in the way they control the lives of boarders (e.g., Cree, 2000; Davies, 1989; Fraser, 1968; Punch, 1977; Smith, 1988; White, 2004a). The current study was able to assess some of these contentions. For example, it assessed and compared the relationships of day students and boarders with peers, parents, and teachers. On present accounts, boarders seem to have interpersonal relationships that are as positive as those of day students. Unlike the perspective of boarding school described by Duffell (2000) and others (see Adams, 1995; McBeth, 1982; Robbins et al., 2006; Smith, 2010), the modern Australian boarding experience appears to provide adolescents with a sufficiently nurturing environment, one that allows them to maintain positive relationships with their families.

Although this study did not assess cultural identity *per se*, on measures such as meaning and purpose and life satisfaction, analysis of self-reports of Indigenous and NESB boarders indicated no apparent problems (see discussion of interaction effects). Indeed, Yeo (2010) suggested that for some overseas students the contemporary Australian boarding house environment allowed them to maintain their cultural group identity with no perceived negative effect of boarding school on cultural identity (see Elias et al., 2012; Jack, 2000; Neegan, 2005; Pember, 2007; Smith, 2010; Voyer, 2007). It may be the case today that boarding schools and educators more appropriately and sensitively address issues of cultural identity.

While Poynting and Donaldson (2005) and Chase (2008) contended that boarding school inculcates forms of hegemonic masculinity or emphasised femininity via a process of socialisation, this was not supported by the current

research as there were no significant interactions between gender and student type on academic and non-academic outcomes. It is worth noting that all of the examples used by Poynting and Donaldson to substantiate their claims of hegemonic masculinity being a mainstay of elite boys' boarding schools relate to the "found life history" in biographies of notable men of the "ruling class" such as Prince Edward (see James, 1992), Prince Charles (see Dimbleby, 1994), Kerry Packer (see Davis, 1982), Patrick White (see Marr, 1991), or autobiographies such as those by Conrad Black (1993) and David Jackson (1990), who attended boarding schools, mostly in the United Kingdom or Canada, in the period between 1920 to 1960. This is not to say that there are not students in boarding institutions who exhibit these extremes of gender identity, but it does not appear to be endemic. Indeed, Connell and Messerschmidt (2005) argued that forms of hegemonic masculinity and emphasised femininity would not be expected to stand out as sharply defined patterns of gender from all other patterns in these institutions.

Theorising around total institution perspectives originated from the work of Goffman (1968), who considered the lives of inmates in an asylum. He defined a total institution as one in which all parts of an individual's life are subordinated and under the control of the organisation in which they reside. The main attribute of total institutions is their all-encompassing nature—that of not being able to leave and having restricted contact with the outside world. To some extent this is true of boarding schools, where for a major part of each school day across each year, boarders work, play, and sleep at school. This external control of the institution over the individual may stifle the non-academic growth of boarders, with consequent implications for academic outcomes. Conversely, there are many aspects (e.g., standards of care, supervised homework, greater access to ECAs, involvement with

peers after school, and support of peers and staff) that underpin positive environments for the individual and that may facilitate academic and non-academic development. Given the relatively equitable or positive outcomes for boarders in this study, particularly relationships with parents and teachers as well as in well-being measures such as meaning and purpose and life satisfaction, there appears to be little evidence to support current boarding schools being described as total institutions negatively affecting academic and non-academic outcomes.

Hence, it could be suggested that the modern Australian boarding school is an "intermediate case" of total institution (see Davies, 1989). This notion of boarding school representing an intermediate form of total institution is supported by contemporary research in this area (e.g., Cookson & Persell, 1985; Cree, 2000; White, 2004a). Again, while not a study of the total institution-like nature of boarding schools, the current study adds support to this notion. Thus, combined with effects of being away from home, yet under the immediate influence of peers and boarding house staff, as well as the continuous influence of parents through modern communications, as an intermediate total institution, boarding school may offer the best of both worlds, assisting boarders to adopt new, more independent, and self-sustaining support structures.

8.5.7 Addressing gaps in the existing research.

In addition to bringing clarity to the contested theoretical and applied terrain, this research sought to address gaps in prior boarding school research. To date, research has tended to narrowly conceptualise boarding school effects, aspects of student experiences, decisions by parents to send a child to boarding school, or policy and management issues relating to boarding school. Research has also tended to focus on relatively few boarding schools, at a single point in time, and narrow

outcome measures—hence, findings tend to be susceptible to the idiosyncrasies of individual schools with questionable applicability across the sector. Therefore, to build on previous research the current study sought to assess the role of boarding school by juxtaposing the outcomes of day students and boarders across a large sample of schools, larger number of students, over time, and using appropriate multivariate modelling to most effectively understand the unique contribution of boarding school over and above other factors that might explain student outcomes.

Historical reflections of former boarders' experience of boarding school is mixed (e.g., Cree, 2000; Hirshberg, 2008)—some positive, some negative, and a sizeable proportion of students ambivalent about their experience. However, what is common to previous research is that boarders appear to maintain positive relationships with peers and parents (e.g., Cree, 2000), as do day students. Unlike previous reports of negative experiences of boarding (e.g., Barton et al., 2005; Duffell, 2000; Elias et al., 2012; Smith, 2010), contemporary Australian boarding would seem to be positive for the majority of boarders—at least, to much the same extent as day students. Hillman and Thorn (1991) suggested that it is timely to conduct a study on the value of emotional growth of students in these environments. The current study provides empirical evidence that indicates that day students and boarders follow similar social-emotional developmental pathways.

The present study has also addressed a salient gap in previous research by taking into consideration students' prior variance in outcomes. This, then, adds to research conducted by TABS (2003), which matched students based on SES. As such, the current study has taken this significantly further by controlling for other salient covariates (e.g., prior achievement, personality), accounting for prior variance in academic and non-academic outcomes, and conducting SEM of day and boarding

students within the same schools matched at Time 1 and Time 2. The TABS (2003) research suggested that boarders scored higher on a range of academic and non-academic outcomes (e.g., academic motivation, educational aspirations, cooperative learning, life satisfaction, parent relationships) in comparison to day students at private or public schools. In the current study, consistent with previous research (see Hughes, 2011; Jimerson, Egeland, Sroufe, & Carlson, 2000; Jonkmann, Becker, Marsh, Lüdtke, & Trautwein, 2012; Shochet, Smith, Furlong, & Homel, 2011), the strongest influence on outcomes was variance in prior outcomes. For example, the longitudinal results demonstrate that in every academic and non-academic outcome, prior variance or prior scores in that measure were by far the most significant influence, either in terms of standardised beta coefficients (β, between .14 to .61, $p <$ .001) or explained variance (R^2, typically between 16% to 55% of explained variance). Taken together, the current study found that when covariates such as socio-demographics, parents'/guardians' education, prior achievement, personality, and prior variance in outcomes were modelled together, there was greater parity between day students and boarders. Possible reasons for this are discussed below under consideration of theoretical and empirical perspectives.

Recently in Australia and overseas, a number of studies have focused more narrowly on a few non-academic measures (e.g., life satisfaction, relationships with parents). The current study has attempted to more broadly explore boarding school across a range of academic, social, and emotional domains. Previous research (e.g., Bramston & Patrick, 2007; Downs, 2002; Ronen & Seeman, 2007; Whyte & Boylan, 2008) has highlighted interpersonal resources (e.g., peers, family, teachers) as maintaining student well-being and aiding the transition to boarding school. Incorporating a greater range of non-academic measures, alongside important

academic measures, provides further support that boarders' relationships with peers, teachers, and parents are similarly positive and comparable to day students. The current study, through the collection of quantitative data from a much larger and wider sampling of students and schools, a broader profile of academic and non-academic measures, and more sophisticated statistical analysis has addressed gaps in previous research while providing support for some previous findings. This has lent clarity to inconsistent effects in previous research and suggested ideas for more in-depth research in the future.

8.6 Implications of the Current Research

The current study also provides a number of suggestions regarding theorising about the role of attending boarding school, shedding light on research methodology to better assess its contribution to student outcomes, and better informing policy and practice. First, as discussed below, the current research demonstrates the importance of drawing on a range of developmental theories and perspectives to better understand what it is that students bring to the boarding school context, how this interacts with other individuals and the boarding school environment, and how these might shape the academic and non-academic development of day students and boarders. The current research has traversed broad theoretical and empirical territory in an attempt to narrow down the range of perspectives that may help to explain the phenomena under study. Second, the present research demonstrates the benefits of using a methodology such as SEM and a multivariate longitudinal design to disentangle the unique contribution of boarding school from other covariates (e.g., age, gender, prior achievement, personality) and prior variance in academic and non-academic outcomes that would otherwise confound interpretation of the results. Finally, the current study provides an empirical basis to underpin recommendations

for policy and practice to improve the outcomes of boarders, day students, and students in other residential education institutions. In doing this, it provides greater understanding to key groups involved in boarding—students, parents, teachers and boarding staff—of the factors that most likely affect academic and non-academic success. These theoretical, methodological, and applied implications are now discussed.

8.6.1 Significance of the findings for theoretical and conceptual frameworks.

8.6.1.1 Ecological systems theory.

Ecological systems theory (Bronfenbrenner, 1979) emphasises the primary role that reciprocal interactions between an individual and their immediate environment—proximal processes—have on human development. These processes are dynamic and formative across the lifespan. The current study did establish that at the individual level, day students and boarders are quite different types of people—each group bringing with them particular attributes to the experience. Interaction effects shed light on the role that interactions between various ecological systems play in the outcomes of particular groups of students; however, these accounted for few significant differences in outcomes of day students and boarders.

Findings of parity in the current study do not support Bronfenbrenner's (1970) suggestion that day students are under the influence of a greater range of socialisation (i.e., school and family) and boarders a more limited range of socialisation (i.e., boarding school). Importantly, absence from the family setting did not have a negative effect on academic and non-academic growth of boarders. Much may have changed in boarding schools since Bronfenbrenner's study 40 years ago, reflecting differences in the traditional or historical context and modern context of

boarding school (e.g., Wheare, 2006). The current study has also included a greater range of covariates and more advanced statistical modelling than Bronfenbrenner's (1970) study. The current findings provide possible evidence that boarders are able to maintain important links with the home, as well as have a greater range of opportunities for socialisation. This notion is supported by findings at the microsystem level where boarders showed greater participation in ECAs yet no significant differences in interpersonal relations. It could be speculated that few significant differences in academic and non-academic outcomes is either the result of similar proximal processes or ecological systems for day students and boarders. Then again, it could be that boarding provides an alternate set of proximal processes and therefore new connections at the mesosystem level that co-exist with those of the family (see White, 2004a) to allow boarders to compensate and achieve equitable outcomes. What the results do indicate is that boarders are not in an environment devoid of important ecological interactions—this would have been evidenced by significantly negative outcomes, which was not the case.

Of particular note are findings that highlight the salient role that time—the chronosystem—played in students' academic and non-academic development (Bronfenbrenner, 1995, 2001). This is evident in the significant contribution of prior variance to students' outcomes. Thus, disentangling such variance extends and enhances our understanding of boarding school. Moreover, consistent with Bronfenbrenner (1986), the inclusion of both "social address" (e.g., gender, language background, parents'/guardians' education) and "person-process" factors (e.g., personality and its role in a longitudinal context), as well as exploring for moderation between student type and covariates (i.e., interaction effects), provides a broader basis for answering developmental questions.

There are a number of possible explanations for greater parity, which the ecological systems theory may help to explain. First, adolescence is a natural period of individuation whereby the influence of peers and other ecological contexts become more salient (see Bronfenbrenner, 1970) (discussed below). The school setting and modern communications (e.g., messaging, social networking) are common to both day students and boarders and therefore represent similar fora for maintaining these important relationships with people both within school and outside of school. Second, nowadays boarders have far greater opportunity to contact (e.g., using modern communications) or go on leave with parents and family; they therefore remain exposed to the influence of family. Third, it may be that boarding school represents an individual-ecological context that is distinct from the home but that acts in conjunction with it to provide a range of proximal processes, different to those of day students, but that have the same net effect in terms of academic and non-academic outcomes. This could be explored further through a qualitative study (see below), as a greater understanding of which proximal processes and how these act on developmental outcomes can better inform schools to maximise the outcomes of boarders.

8.6.1.2 Positive youth development.

As described previously (and also below), some types of ECAs have the capacity to promote positive development (see Eccles, Barber, Stone, & Hunt, 2003; Larson, 2000). Perspectives from PYD hold that youth have sufficiently diverse and complex developmental systems to adapt and "thrive" in new contextual environments (see Benson et al., 2011; R. Lerner & Lerner, 2012; R. Lerner, Lerner, Lewin-Bizan et al., 2011). The goal of PYD is to promote positive outcomes regardless of an individual's regulatory capital and again the role of individual ←→

context relations is reinforced by this perspective. Developmental challenges are seen as normal aspects of adolescence with youth having a natural plasticity of development (Bronfenbrenner, 1994; R. Lerner & Lerner, 2012). Whether boarding school represents one such opportunity for plasticity and acts as a form of PYD is now discussed.

From a PYD perspective, general parity in gains and declines in outcomes between boarders and day students is not unexpected, particularly as PYD research has found consistency in a number of academic and non-academic domains across adolescence as a function of individual and ecological factors (i.e., covariates) (R. Lerner & Lerner, 2012). That is, if individual and environmental covariates persist over time, then developmental outcomes will remain largely unchanged. Consistent with this, the current study found that day students and boarders had similar gains or declines on a range of academic (e.g., motivation and engagement) and non-academic (e.g., well-being, interpersonal relations) measures. The current findings provide further support for the proposition of R. Lerner and Lerner (2012) of the permanence of a range of individual attributes and socio-demographic factors on students' academic and non-academic outcomes more generally. In a similar way, a number of authors have suggested that the unique set of personal dispositions (Hattie, 2009) or "cultural baggage" (see Connell, 1993; Gale, 2011; Rawls, 1999) that students bring with them to the school experience has a more profound effect on academic and non-academic outcomes. Given the general parity in gains and declines in outcomes, boarding school appears to provide the developmental assets to allow boarders to cope with this challenging experience, complementing and meeting any shortfall due to these students living away from their family and the developmental assets that these provide. However, on the whole, it does not appear to give them a

greater advantage over day students, merely making up for what they would otherwise be missing—that is, a “home away from home”.

The model of PYD presented by Benson and Saito (2000) posited that youth development occurs due to the contribution of a range of “inputs”—programs, organisations, socialising systems, and the community. By attending boarding school, boarders have access to largely the same inputs as day students. For example, the findings show similar levels of interpersonal relationships as day students that represent salient developmental inputs. While there are some differences in the exact nature of inputs of day students and boarders out-of-school time, their core inputs are very similar, (e.g., peers, parents, prosocial adults, schoolwork, leisure activities, etc.). It may be the quality of these inputs that is important, rather than the exact quantity or proportions. Each input represents an opportunity to establish young people’s developmental strengths, which produce “outputs” in the form of academic and non-academic outcomes. Boarding is only one of a number of inputs in boarders’ lives, which also include peers, parents, teachers, and attending the day school common to day students.

The current study demonstrated that prior variance and personality, and to a lesser extent a number of covariates—representing inputs—had a significant influence on student outcomes. The effect of inputs on “developmental strengths” (i.e., academic and non-academic outcomes) was generally evident in the longitudinal results as these inputs largely remain constant over time; thus, after controlling for these inputs, day students and boarders showed similar gains and declines over the period studied. Had boarders been missing important developmental inputs then significant negative differences might have been evident between boarders and day students across these domains; however, this was not the

case. Even though boarders were lower in more favourable regulatory capital and higher in less favourable regulatory capital (e.g., age, parents'/guardians' education, Indigenous cultural background, prior achievement, personality), after controlling for these factors and prior variance, boarders and day students achieved similar outcomes.

PYD research has revealed that not all youth development programs are the same in their effectiveness to develop academic and non-academic outcomes, emphasising the possible unique "effects" of different types of structured activities (see Eccles et al., 2003; Farb & Matjasko, 2012). As with many PYD programs, the specific elements of the program often govern the outcomes (e.g., Beets et al., 2009; Catalano et al., 2004). This may be true of boarding schools too. The findings show greater attendance at school, and therefore access to academic resources, as well as participation in ECAs, and therefore access to non-academic resources for boarders. While living in residence at the school provides boarders with further opportunity to engage in curricular and ECAs, the outputs—academic and non-academic outcomes—generally tended to be the same as day students. The reason for this possibly lies in young people's natural developmental plasticity, of sourcing whatever developmental assets they require, to adapt and thrive in whatever circumstances they find themselves living in (see Benson et al., 2011; R. Lerner & Lerner, 2012; R. Lerner, Lerner, Lewin-Bizan et al., 2011). Given the positive reports of academic and non-academic outcomes of both day students and boarders, it may be that both groups are "thriving". Larson (2006) suggested that youth have the capacity to be agents of their own development and that out-of-school time activities provide contexts where they can develop the skills and competencies to meet life's challenges. Boarding school may provide such an environment for

boarders. Further research is needed to elucidate how regulatory capital or developmental assets differ for day students and boarders, their unique contribution to the developmental outcomes of these students, and whether these groups are thriving in comparison to other youth outside of these schools.

8.6.1.3 Extracurricular activities.

Extracurricular activities (ECAs) can act as a proxy for particular socialisation experiences that cause holistic development (Marsh & Kleitman, 2002). However, Shulruf and Wang's (2013) meta-analysis of ECA participation suggested a methodological bias in previous research that tended to favour more positive findings and that in many instances effect sizes were low, indicating no meaningful association. A number of researchers have also pointed out that while there may be some academic and social gains through well-designed ECAs, the characteristics contributing to these outcomes are still unknown (Lewis, 2004; Shulruf & Wang, 2013). ECAs may provide a critical ecological context for adolescent development (e.g., Blomfield & Barber, 2010; Feldman & Matjasko, 2005) but further research is required in this area.

As a form of ECA, findings of the current study did seem to support a number of perspectives—for example, developmental (Holland & Andre, 1987) and developmental-ecological models (Bronfenbrenner, 1979; Szapocznik & Coatsworth, 1999). The study found that where significant effects emerged, they tended to be modestly positive, although overall not distinctly different to the experience of day students. In contrast, there was no apparent support for the zero-sum perspective, which would hold that time spent in boarding contexts is time that diminishes other outcomes. The current study also confirms the findings of Bramston and Patrick (2007), who found no significant differences in the well-being of students

transitioning to boarding, which may indicate that a threshold or over-scheduling effect (e.g., Fredricks, 2012) was not evident (i.e., increased involvement would have a negative effect on development). However, this should be further examined in future studies by comparing day/boarding students in terms of hours involved in school activities each week or years attending that school (as a day student or boarder). In general, youth appear to benefit more from longer periods of participation (e.g., ECAs) (e.g., Bohnert et al., 2010). This could be further investigated by comparing whether the number of years of boarding has a significant effect on outcomes, to a greater extent than years of being a day student. Future research could also give greater consideration to breadth and intensity of the boarding and day school experiences (see Busseri et al., 2006; Bohnert et al., 2010).

Although not significantly different to day students, the relationships of boarders appear to play an important role in their success at school and in academic and non-academic outcomes (e.g., Downs, 2002; Han, Jamieson, & Young, 2000; Ronen & Seeman, 2007). Further research could explore how prosocial peers may mediate boarding effects (see Fredricks & Eccles, 2005) or how they may act as enabling or protective factors. While boarders have some capacity to select and build close friendships with similar peers in the boarding house, they are also placed in boarding houses with other students where such a friendship may not exist. On the other hand, day students have greater capacity to associate with peers with whom there is a close relationship and after school hours do not have to live with or be under the influence of other students where a close relationship does not exist. It may be that boarding house represent a “hot house” where some orientations to school or particular activities are more strongly influenced by other students in the boarding house, or it may be that some students are attracted to board because of the ECA

opportunities available (MacGibbon, 2011; Nguyen-Emmett, 2013). Given the potential differences in peers who may influence the day-to-day lives of day students and boarders, this presents a unique opportunity to further assess the impact of prosocial peers on student outcomes.

While positive academic and non-academic outcomes are maximised if students are involved in multiple forms of school-related activities (Finn, 1989; Marsh & Kleitman, 2002; see also Barber et al., 2001; Eccles & Barber, 1999; Fredricks & Eccles, 2005), the general parity of results between day students and boarders highlight that the boarding experience is positive in terms of academic and non-academic outcomes, but not more so than for day students over the course of a year. For example, in the current study, there were no significant differences found between day students' and boarders' valuing of school, enjoyment of school, or educational aspirations, which might point to differences in students' identification and commitment to school. Future research in this area might explore differences in students' identification and commitment to the boarding house/school in comparison to that of the school more broadly, while juxtaposing those of day students to substantiate contentions raised by Cree (2000; see also, Downs, 2002; White, 2004b).

The current study shows little evidence of boarding school reducing or exacerbating social inequality, as there were very few interaction effects. Curto and Fryer (2011) have suggested that urban public boarding schools for students of low SES are a cost-effective way of increasing academic achievement among these students. While this study has been able to compare day students and boarders with the same relative advantage/disadvantage, it must be noted that in Australia most students who are able to attend such schools are more advantaged than many other students in the general population. This study has been unable to compare whether

socially disadvantaged students who board (e.g., low-SES, rural, non-English speaking, or Indigenous cultural background) are better or worse off than similar students who attend schools in their local (and possibly disadvantaged) geographic regions. Even for those youth who have the opportunity to attend high school, the type and location of the school can determine what opportunities students have for post-secondary studies and qualifications (Bradley et al., 2008; Teranishi & Parker, 2010, Wyn, 2009). This presents an avenue for further investigation—for example, the effect of "rurality" in marginalising individuals and communities (Australian Institute of Health and Welfare, 2013)—by comparing students who remain in their home communities and comparable students who go to boarding school.

8.6.1.4 Attachment theory.

Theories of attachment (e.g., Ainsworth & Bowlby, 1991) centrally position the role of parents and other significant attachment figures—such as peers and teachers—in the lives of young people and their academic and non-academic development (e.g., Ainsworth, 1989; Allen, 2008). It might be suggested that in some instances boarding school has the potential to distance young people from important influences of the family, leading to negative effects relative to day students that are more regularly exposed to the proximal influence of the home (e.g., Fisher, Elder, & Peacock, 1990). In contrast, it might be suggested that boarding may distance other students from potentially "toxic" home environments (Bowlby, 1952; Power, 2007; Scott & Langhorne, 2012), placing them closer to positive social and supportive assets (Martin, Marsh, McInerney, & Green, 2009). The current study found that boarders were not disaffected in terms of relationships with parents, peers, or teachers, or in terms of academic and non-academic outcomes. This is somewhat

consistent with Cree (2000), who found that boarding school did not diminish boarders' relationships with their parents.

The precise reasons for this are unclear, and future qualitative research may uncover the deeper processes operating. Perhaps absence from parents and family "makes the heart grow fonder". Perhaps for boarders, the daily struggle with homework and study (Horsley & Walker, 2013) that would typically cause friction with parents is shifted onto the school, whereas day students and their parents continue with this struggle. Along similar lines, as interactions between boarders and their parents are restricted to fewer interactions when on leave from school or during holidays, perhaps there is a greater focus on positive interactions and sharing "good times". As mentioned previously, modern communications and less restrictive school-leave arrangements may allow boarders and parents to maintain relationships and attachments, and therefore important developmental or supportive assets than may have been the case in the past. In any case, boarding school does not seem to negatively affect boarders' perceptions of their parents and this has some relevance to attachment perspectives and boarding school.

Attachment theory also provides a framework through which to understand findings of parity in day students' and boarders' relationships with parents, peers, and teachers. Bowlby (1969a; see also Hill & Tyson, 2009) indicated that it is the quality of social interactions with caregivers, not the quantity of time spent interacting, which is significant to an individual's development. Bowlby (1952) even suggested that boarding school may foster more favourable parent-child relationships due to time spent away from the normal conflicts at home. Adolescence is a natural time of individuation (Ainsworth, 1989; Allen & Manning, 2007; Berndt & Keefe, 1995; Gorrese & Ruggieri, 2012) and attachment early in childhood is associated

with positive psycho-social and behavioural outcomes later in adolescence (Washington & Dunham, 2011; see also Freeman & Brown, 2001; Scott et al., 2011). That is, positive attachment early in childhood provides individuals with the necessary internal working models of relationships to successfully navigate the challenges of life and adolescents are able to move away from the secure base of parents, adding other significant attachment figures (Allen & Manning, 2007), as a normal part of successful development. Therefore, adolescents may be naturally well-equipped to deal with the changes and challenges associated with boarding. Boarding school may facilitate the natural process of independence, representing an adjunct to the home and in concert with the family as a source of socialisation (see White, 2004a).

From an attachment perspective, it is not unexpected that day students and boarders are not significantly different in terms of relationships with parents and other significant figures such as peers and teachers (e.g., Laible et al., 2000). Contemporary attachment research emphasises the successively nested nature of children within a dynamic ecological system that includes multiple proximal and distal levels of influence (see Pianta et al., 2003; Sabol & Pianta, 2012). However, in line with bio-ecological or developmental systems models, attachments and relationships to parents, peers, and other primary caregivers are only one of many interrelated factors in a complex system of child development (e.g., Cummings & Cummings, 2002). The current research found support for covariates predicting students' academic and non-academic outcomes to a greater extent than student type (i.e., boarder or day student) alone. It is clear that relationships with parents, peers, and teachers are important for boarders' successful academic and non-academic development while away from home, but what is not yet known are the mechanisms

by which they act on these outcomes. SEM in the current study had student type (day/boarding status) predicting academic and non-academic outcomes, including relationships with parents, peers, and teachers. It was therefore unable to assess whether relationships with each of these attachment figures is more valued over another, or whether particular combinations of relationships (e.g., with boarding peers vs. day peers) more strongly influence academic and non-academic outcomes.

A number of previous studies have indicated that boarders have a greater influence from prosocial peers, which may promote adaptation to boarding school, well-being, and motivation and engagement (e.g., Downs, 2002; Ronen & Seeman, 2007; TABS, 2013). However, in terms of peer relations, the current study found that both boarders and day students enjoyed similar levels of positive relations with peers. Future studies could further investigate the nature of these relationships and any prosocial benefits on academic and non-academic outcomes. For example, future studies could compare boarding students' relationships with boarding peers alongside their relationships with day peers (and vice versa) in order to assess the differential effects of these two relationships on school outcomes. Further qualitative research could also investigate the nature of day students' or boarders' peer groups (previously discussed; see also Fredricks & Eccles 2005). This presents an opportunity for future research to investigate whether day students and boarders differ in their repertoire of relationships (e.g., prosocial peers) and how any differences might affect adolescent development in these circumstances.

8.6.2 Significance of the findings for boarding schools, boarders, and parents.

The applied nature of this study provides a number of useful, evidence-based insights in relation to the boarding school experience. First, the findings of this study

highlight the multidimensional nature of academic and non-academic outcomes of day students and boarders more generally. For example, these results shed light on how academic and non-academic outcomes are affected by the combined effects of a number of key socio-demographics—cultural baggage (see Connell, 1993; Gale, 2011; Rawls, 1999) or unique set of personal dispositions (Hattie, 2009)—such as age, gender, language background, Indigenous cultural background, parents'/guardians' education, and prior achievement, but especially personality and students' prior variance in outcome factors. Second, the study reinforces much previous research in the academic and non-academic domains demonstrating that there are no simple solutions to promoting growth in these areas. Third, it is important that educators understand the limitations of the influence of attending boarding school on outcomes and therefore aspects of academic, social, and emotional development that they may realistically affect, over and above other influences shared by day students. These, and other implications, are now discussed.

8.6.2.1 Implications for boarding schools.

The results of this study show that day students and boarders do not gain or decline in academic and non-academic outcomes to different extents, except on absenteeism and participation in ECAs. Most of the differences in outcomes can be accounted for by covariates. Indeed, given that boarders reside at the school for long periods of time, and boarding schools have structures in place to ensure attendance, it is to be expected that boarders are less absent from school. Similarly, given that boarders have greater opportunity and access to school facilities, it is to be expected that they would have greater participation in ECAs.

Knowing that significant variance in academic and non-academic outcomes resides with covariates means that schools could provide specific strategies or

resources that better enable individual boarders to flourish and make the most of the boarding experience. As noted previously, on average, boarders in the study were significantly different to day students in terms of age (i.e., older), parents'/guardians' level of education (i.e., lower), prior achievement (i.e., lower), and salient personality traits (i.e., lower agreeableness and openness and higher neuroticism). Even though boarders achieved similar outcomes to day students after controlling for the unique contribution of these and other covariates and prior variance, it is nevertheless important that schools are vigilant for these "at-risk" factors. For example, boarders are typically older and therefore, according to Martin (e.g., 2007), are likely to reflect a maladaptive pattern of motivation and engagement at school. Similar declines in other academic and non-academic outcomes have been noted (e.g., Côté, 1999; Fredricks & Eccles, 2006b; Martin & Marsh, 2006, 2008a). Therefore schools may consider programs or strategies that target motivation and engagement of older students at the boarding school level. Such strategies may include global awareness for boarders and staff about factors that either promote or impede academic outcomes (see Martin, 2007, 2009b, 2010b).

Similarly, knowing boarders tend to have lower prior achievement (i.e., literacy and numeracy), schools can be more aware of this factor when a new student joins the boarding house, or put in place more global strategies that promote the literacy and numeracy of all boarders. For example, individual boarders may be assisted by direct instruction or remedial assistance, or boarding schools may adopt literacy programs (e.g., Boardman et al., 2008; Marzano, 2004; Slavin, Cheung, Groff, & Lake, 2008) or numeracy programs (e.g., Junior Elementary Math Mystery; Farkota, 2003, 2010) in their boarding houses. As mentioned previously, lower prior achievement has been found to be associated with lower scores of motivation and

engagement (Martin, 2007; Marsh, 2007; Valentine et al., 2004) and well-being (Quinn & Duckworth, 2007). In this regards, intervention seeking to promote motivation and engagement may be fruitful when it is targeted at new boarders.

Boarders also tended to be lower in factors such as agreeableness and openness and higher in neuroticism. Knowing this is likely to be the case for boarders, schools can provide education that aids them to develop strategies that may circumvent any negative effects due to some personality factors such as neuroticism (see Little, 2008) related to academic and non-academic success (discussed below). Apart from prior variance, personality accounted for the greatest explained variance for almost all academic and non-academic outcomes in the present study so is worthy of particular consideration by boarding schools. While many of these attributes that boarders bring with them to school cannot be changed (e.g., age, parents'/guardians' level of education), or are relatively stable (e.g., personality traits), early identification of students with particular attributes, or boarders more generally, mean that early intervention is more likely to yield favourable results.

A number of interaction effects also suggest that in a few cases particular characteristics of students do affect academic and non-academic outcomes. Thus, if such attributes have the potential to influence the outcomes of boarders, then boarding schools (or parents) should take such factors into account either when enrolling students, assigning students to particular boarding houses, or providing academic or pastoral support offered. For example, boarders who rated themselves as more conscientious also reported more positive relationships with parents. Therefore, less conscientious boarders could be identified in order to assist them to maintain positive relationships with parents (e.g., regular contact with parents or more regular school-leave), or they could be trained in how to overcome stable personality traits

that might leave them "stuck" (Little, 1996, 2000, 2008) (see below). The longitudinal interaction effects suggest that day students who rated themselves as more agreeable also reported peer relationships that were more positive than boarders. Boarding schools may look at activities that promote living and working in harmony with other students, or indeed, greater openness to experience (a trait in which boarders tended to score lower), either by providing a greater range of ECAs, orientation activities, peer support/buddy programs, or "adopt-a-new-boarder" programs that allow new students to engage with prosocial peers (e.g., Eccles & Barber, 1999; Eckert, 1989; Eder & Parker, 1987; Fredricks & Eccles, 2005; Mahoney et al., 2005; Marsh & Kleitman, 2002), build further support, and develop relationships with existing boarders and their families.

8.6.2.2 Implications for boarders.

One of the major findings of this study was the role that prior variance and personality, and to a lesser extent prior achievement, play in the academic and non-academic outcomes of students—boarders and day students alike. Students' prior scores on academic and non-academic measures are the best predictor of these same outcomes (see Hattie, 2009; Hughes, 2011; Jimerson et al., 2000; Jonkmann et al., 2012; Martin, 2011, Martin et al., 2013; Shochet et al., 2011; Valentine et al., 2004; van Ewijk & Sleegers, 2010), and the current study was able to account for this variance. With this in mind, there is an opportunity for both boarders and day students to improve on or adopt more favourable academic and non-academic outcomes as growth in these areas may provide further benefits both inside and outside of the classroom. For example, a simple strategy such as students undertaking a personal audit of their current development in terms of academic and non-academic outcomes may give them insights into areas for further growth (e.g.,

Ubalancer, 2012). Another option would be goal setting in an individual's areas of weakness in academic and non-academic domains. While not boarder specific, given that some boarders come from disadvantaged geographical regions, and boarders typically start from behind in a range of measures, improving on prior scores for academic and non-academic outcomes—for example, adaptive motivation, academic buoyancy, person bests—may enable them to get greater benefit out of the boarding experience.

In the current study, boarders typically scored higher on less favourable personality traits (e.g., neuroticism) and lower on more favourable traits (e.g., agreeableness and openness to experience). Personality traits are relevant and significant factors in the positive development of individuals (see Busato et al., 1999; de Raad & Schouwenburg, 1996) and therefore students' experience of boarding school, or school more generally, may differ due to relatively stable personality traits (see Costa & McCrae, 2006; Dunning, 1995; Jorm, 1989; Little, 1996, 2000, 2008). The longitudinal analysis found that a large degree of residual variance of student outcomes is attributable to a number of facets of personality. For example, agreeableness and neuroticism were found to play particularly salient roles across academic and non-academic outcomes, followed by conscientiousness also being significant in these domains. While it is unlikely that boarding schools can affect individual students' fixed or stable personality traits, they are well-suited to providing an individual-ecological context (Bronfenbrenner, 1970; Coleman, 1987; Cree, 2000; Cross & Swiatek, 2009; White, 2004a), which may reinforce desirable free traits (Dweck, 2008; Jorm, 1989, Little, 1996, 2000, 2008) or modes (Goleman, 2011) that allow students to reach academic and non-academic goals.

Suspension of fixed “biogenic” traits and adoption of free traits is a normal part of daily life in order for individuals to adapt to their unique ecological settings and to flourish (Little, 2008; see also Marsh, 2011), and this is also the case for individuals attending boarding school (see Duffell, 2000 for “strategic survival personality”). A free trait is a personality trait that has been strategically modified in order to advance a particular personal project (Little, 1996, 2008). For example, a biogenic introvert may act in an extroverted manner (free trait) in order to fit into a particular social environment (Little, 2008). However, there is the potential for the boarding school, boarding house, and boarding staff to assist boarders to use knowledge about the modifiability of traits for their academic and non-academic advantage. Free traits can foster new competencies that allow individuals to be successful in new ecological settings (e.g., boarding school) (Little, 2008). How might boarders adopt free traits that are more likely to achieve academically, socially, and emotionally pertinent personal projects? Knowing that agreeableness, conscientiousness, and less neuroticism are desirable for better academic and non-academic outcomes, boarders can adopt performance modification of these free traits.

Previous research has shown that students adapt well to boarding school (e.g., Bramston & Patrick, 2007; Downs, 2002; Ronen & Seeman, 2007; Whyte & Boylan, 2008) but little is known about particular attributes of individuals or processes within the boarding house that promote this transition and adaptation. Therefore, further research to better understand the mechanisms that promote coping and favourable traits would be informative (see discussion of further research below). Given the emergence of a “residential curriculum” (e.g., Appleby College, 2010; Deerfield Academy, 2013; Mondragon, 2012, Washington Academy, n.d.), and that boarders

are typically lower in more favourable traits and higher in less favourable traits, this presents further opportunity to provide boarders with an awareness of their ability to modify traits in order to be more successful at school and in the boarding house.

Prior achievement is a key predictor of subsequent achievement and achievement-related behaviours (Hattie, 2009) and in the current study boarders were found to be lower in both literacy and numeracy. While they have the same growth and decline in academic and non-academic outcomes as day students, they nevertheless are starting from a lower base in these critical areas (e.g., Hattie, 2009; Martin 2007; Quinn & Duckworth, 2007). Boarders can employ a number of strategies to target these should they be areas of concern. For instance, boarders could read more (e.g., reading at bedtime, see Harper Collins, 2013), practise their numeracy skills (e.g., Mathletics, see 3P Learning, n.d.), or avail themselves to additional academic tutoring and e-learning services after school hours (e.g., yourtutor, n.d.). Given that boarders have more time available at school and under the supervision and instruction of staff, boarding schools have a unique opportunity and environment in which to encourage and facilitate students to redress these areas of weakness.

In summary, understanding the significant contribution of each unique set of covariates in shaping the academic and non-academic outcomes of individuals provides an awareness that if boarders (and boarding schools) seek to go beyond the status quo and parity with day students, they need to be more purposeful in the interactions and environment in which they live for much of the year for greater transference into outcomes to occur. There is also the potential for boarding schools to facilitate this development through a residential curriculum (discussed previously).

Further research may consider the effect of individual-ecological contexts on the academic and non-academic outcomes of boarders.

8.6.2.3 Implications for parents.

In general, there is a desire by parents, educators, and governments for children to achieve to their potential and have access to quality educational resources (AHRC, 2000a; AHRC, 2010; Bartholomaeus, 2006; Cree, 2000; Lawrence, 2005; White, 2004a; Wild & Anderson, 2007). For many boarding parents, this is the case given the limited opportunities and resources that may be available in rural and remote areas (e.g., Shulman & Prechter, 1989). Metropolitan boarding parents similarly choose boarding for greater access to opportunities and resources, sometimes due to their work commitments, and also to allow children to access ECAs and the benefits these activities may yield (MacGibbon, 2011; Nguyen-Emmett, 2013; Wheare, 2006). Therefore, parity in terms of gains and declines in academic and non-academic outcomes may be a positive finding. The study also found that where there were significant differences (e.g., absenteeism, participation in ECAs), these tended to favour boarders. It is also worth reiterating for parents that the greatest gains in academic and non-academic outcomes appear to be within a boarder's first year at boarding school. These students were found to be higher than day students in parent relationships and enjoyment of school and lower than day students in absenteeism; that is, whereas boarders tend to start lower than day students in some measures, based on the present preliminary data, they appear to catch up and achieve equitable outcomes inside the first year.

The findings of the current study also indicate what factors parents should keep in mind when assisting their child to transition into and throughout the boarding experience—namely, children's predisposition in academic and non-academic

outcomes, prior achievement in literacy and numeracy, and personality traits. With this in mind, it is important for parents to monitor their child's academic and non-academic progress and to work closely with boarding staff to ensure they receive any additional support that may be required. For example, understanding that boarders may have lower levels of prior achievement allows parents to consider whether additional direct instruction and skill development (Liem & Martin, 2013) prior to or at the commencement of boarding will be of benefit in order to nurture core academic skills important for academic functioning and therefore reduce anxiety during this transition (see Bramston & Patrick, 2007; Whyte & Boylan, 2008). Similarly, knowing that personality plays an influential role in the academic, social, and emotional lives of students means that parents can consider which boarding school may suit them better, what pastoral support may be useful, and what sorts of activities may enhance their progress at boarding school.

What is evident from the current study is that boarders appear to maintain positive relationships with parents while at boarding school, or at least as positive as day students do while living at home, and that these relationships gain or decline in a similar fashion for both groups. First, it is important to note that students who previously had good relationships with parents, who were more agreeable, and less neurotic tended to maintain positive relationships with their parents throughout the study. Second, contemporary boarding schools do not appear to be the total institutions (Davies, 1989) they may have been in the past (Wheare, 2006). Even though there is often distance between them, it is important for parents to take the opportunity of the more flexible school-leave and communication arrangements in order to maintain positive relations with their children and to continue to provide

support and the developmental assets children need to sustain them while living away from home.

Given the previous negative history of boarding, for parents to know that their child will achieve commensurate outcomes if they are boarding to if they were a day student should reduce concerns about the potential negative effects of the experience. In the majority of academic outcomes, day students and boarders had very similar developmental patterns. Parents can take comfort knowing that boarders also score favourably on well-being measures and maintain positive relationships with parents during their time away from home. What this study also highlights for parents is that some students seem more suited to boarding. It would appear that parents may knowingly or unknowingly choose students who they feel are a better "fit" for the boarding experience. As is the case for students generally, boarders who are younger, higher in prior academic achievement, more agreeable, conscientious, open to experiences, and lower in neuroticism, may be better placed with regards to academic and non-academic outcomes. In summary, boarding appears to be a positive experience for the majority of boarders, which allows them to maintain relationships with parents and an alternate residential experience that fosters favourable academic and non-academic outcomes.

8.6.3 Significance of the findings for research and researchers.

The current research has significance for both research and researchers in the field of boarding school and residential education. This is the first study of this type that has considered a broad range of theories and perspectives to frame boarding research and, while not intended to be comprehensive in nature for the current study, provides direction for future research to explore in greater depth. As outlined in Chapter 2, the study emphasises the importance of integrating theoretical and

conceptual perspectives to better frame research in this area, combined with sophisticated methodologies that can lead to more robust findings and conclusions than previous boarding research. Accordingly, the present study included a number of methodological and design features not previously utilised in boarding school research to advance findings of this study. These included a large-scale sampling of students and schools from across Australia, including a range of relevant covariates known to affect developmental outcomes, multidimensional measurement of the role of boarding school, assessing a broad range of pertinent developmental outcomes in the form of academic and non-academic outcomes, and a longitudinal research design that juxtaposed the results of day students and boarders while controlling for prior variance in academic and non-academic outcomes. This was achieved, following the recommendations of Marsh and Hau (2007), by integrating conceptual and methodological elements, thus providing a more rigorous methodology through the inclusion of techniques such as multiple measurements, multiple predictors and outcomes, multiple indicators, multiple time points, latent variable modelling, multi-group invariance testing, CFA, and SEM. The research design of the current study thus allowed more reliable results to be derived from the data and more valid conclusions to be drawn that were not idiosyncratic of particular students and schools. A recommendation from the current study would be for researchers in the area of residential education to consider incorporating these methodologies in future research, which would provide further valuable information for boarding schools, boarders, and parents to facilitate greater development in the academic and non-academic domains.

Future research should similarly seek to control for salient covariates and prior variance of the outcomes measured so as to allow the results to accurately

assess the unique contribution of boarding school on academic and non-academic outcomes. In the present study, inclusion of these covariates was important in better understanding the role of boarding school. There is also potential to conduct a multi-level study to determine where greatest variance in boarding outcomes exists; at the individual, boarding house, or boarding school level. A qualitative approach may provide a greater understanding of the particular proximal processes at play in the boarding house environment that act to generate an alternate individual-ecological context. This might further answer the question as to how day students and boarders achieve comparable academic and non-academic outcomes when they have differing amounts of caregiver interactions, differing levels of out-of-school time activities, and differing residential environments. Such research may explore differences in students' identification and commitment to the boarding house and school. Research should also further investigate the role of boarding school in the lives of socio-economically disadvantaged students (e.g., low-SES, rural, non-English speaking, or Indigenous cultural background) by juxtaposing the academic and non-academic outcomes of such boarders against similar peers attending local, day schools in their home regions.

Given the significance that interpersonal relationships play in human development (Argyle, 1999; Argyle & Furnham, 1983; Glover et al., 1998; Gutman et al., 2002; Irwin, 1996; McCarthy et al., 1990), particularly in the boarding house (see Anderson, 1994), further research could look to examine the nature of relationships with peers, parents, and teachers to identify whether day students and boarders have different patterns of relationships and how they might be protective factors or act as assets in the development of academic and non-academic outcomes. This may include a sociometric method to investigate students' social realities and

relationships between students' peers and students' behavioural traits (e.g., Del Prette, Del Prette, De Oliveira, Gresham, & Vance, 2012; McMullen, Veermans, & Laine, 2013; van den Berg & Cillessen, 2013). The current research highlights the complex nature of the boarding experience and that there is still much to know to better understand this phenomenon.

8.7 Limitations and Directions for Future Research

The current investigation has explored a model of the role of attending boarding in students' academic and non-academic outcomes, providing a global overview of boarding school and its contribution to school outcomes. Importantly, as this section discusses, there is now scope for analysis of a more comprehensive set of boarding factors and elaboration of specific elements of theoretical perspectives. There are also limitations to consider when interpreting the findings. These limitations and recommendations for future research are now discussed.

8.7.1 Self-reported data.

The current study collected self-reported data on students' perceptions of their school (day and boarding) experience. Collecting self-reported data is convenient and allows for large numbers of students to participate, and this was the case for the current study of students from schools across Australia. This is a viable form of data collection for a large-scale study, especially when the constructs of interest are primarily intra-psychic, such as in this study (Crockett, Schulenberg, & Petersen, 1987; Howard, 1994). Notwithstanding this, potential exists to validate these data with more "objective" data on these measures from other sources such as parents, teachers, and peers. Motivation theorists (e.g., Pintrich, 2003) have raised concerns about using self-reported data alone. These concerns relate to measurement concerns with shared variance and random error that may account for some of the

observed relationships of constructs (Schmitt, 1994; Spector, 1994). Contention also surrounds individuals' interpretation of questions and conscious distortion of their actual ability or perception of themselves (Schmitt, 1994). The current research aimed to overcome these contentions and reduce the potential effect of these issues by using multi-item constructs and a longitudinal design that establishes stability, emphasises construct validity, and controls for measurement error (see Chapter 4). The study also used academic and non-academic measures that have previously been found to demonstrate sound reliability and validity as self-report measures. However, future research would do well to consider other sources of data collection.

8.7.2 Contextual influences.

8.7.2.1 Individual-ecological contexts.

This research can be improved further by considering the individual-ecological contexts of students situated within different social and cultural contexts—for example, including students from government boarding schools (of which there are few)—as these contexts might highlight differences in academic and non-academic outcomes due to education sector. A limitation of the present study is that the sample comprised only adolescents attending independent (non-government) schools across Australia. A heterogeneous sample of students from both government and non-government schools is desirable as this would allow findings to be considered with less concern for bias. Given the differences in general attributes of boarders compared with day students identified in this study, and that the high cost of attending independent boarding schools would exclude many Australian youth, students who are able to attend government boarding schools are an important comparison due to social and cultural differences that may exist but that could not be detected in the present study. While the current study attempted to control for the

variance of students from different socio-economic and cultural backgrounds, this research might be extended in the future by applying this model to other populations of students living in other residential settings (discussed below).

Educational researchers typically consider individual student outcomes, sometimes consider classroom or school environment, but rarely consider both simultaneously using appropriate methodology (see for example Hill & Rowe, 1996; Martin & Marsh, 2005; Marsh et al., 2008). Indeed, to the extent that this is rarely appropriately assessed among classrooms and schools, it has never been assessed among boarding houses and schools. In educational research—and the social sciences more generally—data often have a multi-level structure. In the case of boarding school, students are clustered under boarding houses, that are in turn clustered under schools. Also, as indicated, there may be differences at a national level between boarding schools. Hierarchical linear (or multi-level) modelling is specifically designed to handle the difficult statistical complexities associated with such data and this technique opens up new perspectives about constructs operating at the student, boarding house, school, and national levels that could be studied in the future. While data were collected at multiple levels (e.g., individual, boarding house, and school levels) as recommended by Martin and Marsh (2005), due to too few boarding schools it was not possible to incorporate multi-level analysis in order to more clearly understand at which level or in which context greater variance in outcomes lies. What is the relative contribution of school, boarding house, and student on key academic and non-academic outcomes? Answers to these questions hold substantial implications for policy and practice (discussed previously). This presents another opportunity for future research in this area.

8.7.2.2 National contexts.

It is likely that numerous aspects of the Australian boarding context differ in comparison to other national contexts due to uniquenesses in historical and contemporary influences (Cree, 2000; White, 2004a). Therefore, being located within one national context is likely to have some bearing on findings. For example, in Australia, boarders have typically been drawn from rural and remote areas due to lack of access to educational resources in these geographic regions, and it is unlikely that their parents will have received the same levels of education as their urban counterparts. Indeed, this very factor (parents'/guardians' education) was identified in this study and was relevant to the present findings. In other national contexts, there may not be so many rural or remote students and thus education levels of boarders' parents/guardians may be quite different. Similarly, relative to day students, there is greater representation of Indigenous students in Australian boarding schools (Papworth, Martin, Ginns, Liem, & Hawkes, 2012), and this also may be quite different to other national contexts. In the Australian context, attending boarding school is often a means to overcome educational barriers associated with distance and rurality, whereas in the United Kingdom and the United States, traditionally attendance at boarding school is more focused on college preparation (Cree, 2000; Greene & Greene, 2006; Shane et al., 2008; White, 2004a).

Socio-economic status may also play a greater part in these overseas contexts, as it is contended by a number of authors (e.g., Chase, 2008; Cookson & Persell, 1985; Duffell, 2000; Finn, 2012; Gaztambide-Fernández, 2009a) that boarding schools reinforce social status, power, and privilege. This study was unable to measure notions of power, privilege, or elitism, and measures of social status and their effects on academic and non-academic outcomes would provide greater

empirical evidence to qualify this contention. There is also a need for cross-national research shedding light on different types of students attending boarding school (e.g., in terms of SES, prior achievement, personality, learning needs) in different countries and the effect of these differences. Taken together, there will be factors unique to boarding schools in different national contexts, and these are important to consider when interpreting the present results, comparing against other international boarding contexts, and when selecting covariates to include in future research.

8.7.2.3 Further contextualisation of the boarding experience.

The current study highlights the need for research that further contextualises what might be regarded as the "modern" boarding school experience. What other factors, other than student type, might allow distinctions to be made according to different types of boarding (and day) school experience? Such factors might include size of the boarding cohort or number of boarders in a boarding house, age when commencing boarding school, number of years boarding, siblings or family history of boarding, or distance from home to a metropolitan centre. What are the views of students attending boarding school and do these significantly affect their experience of boarding school? Similarly, what are the students' or parents' reasons for attending boarding school (see Bartholomaeus, 2006; Cree, 2000; Lawrence, 2005; White, 2004a; Wild & Anderson, 2007) and do these have an impact on student outcomes, over and above the student-level factors identified in the present study? While the effect of school-level factors was addressed in the current study, the range of other possible factors should be considered, although in the current study the contribution of such factors was found to be negligible in comparison to student-level factors. How else can "quality" of the boarding experience be assessed and how do contemporary and historical accounts of boarding compare on this aspect of the

experience? Future research may also include additional variables that assess the role of communications technology in keeping boarders in touch with home—and the quality of these interactions with parents and their subsequent effects on academic and non-academic outcomes. What role do peers play and what is the nature of these relationships in the context of boarding school? What other individual-ecological interactions are significant in shaping a student's experience of boarding school? Collection of real-time information (e.g., with handheld mobile technology, see Malmberg, Little, Walls, & Martin, 2013; Malmberg, Woolgar, & Martin, 2013) from day and boarding students that juxtaposes contemporaneous quantitative and qualitative data on the daily experience may further illuminate factors acting over a much shorter period of time, within this ecological context, including the interaction with significant "others"—peers, teachers, and parents.

8.7.3 Current students—prior and post students.

The present study focused on current day/boarding students, and a small sub-sample of students prior to attending boarding school as an ancillary study, to assess changes in academic and non-academic outcomes over the course of a full year of school. It may be that the timeframe for this study was too short for differences in outcomes to become evident. Perhaps the influence of boarding school does not manifest until later in life (e.g., Duffell, 2000). It may be that potential students who have a family history of boarding (Cree, 2000), or who were registered at a young age, have had a long time to identify with the boarding school experience in the years prior to commencement or very early on in the experience (Cree, 2000; Duffell, 2000; White, 2004a). It has been contended that boarding school represents a process of readjustment and re-socialisation to the norms and values of the boarding house (e.g., "strategic survival personality"; Duffell, 2000; see also Marsh, 2011; White,

2004a) and this provides an opportunity for future research to assess this contention. While sampling was conducted at the beginning of each academic year, and therefore soon after boarders commenced, it would be useful to get comparative baseline data early in the year preceding boarding.

Future research might seek to further investigate these outcomes in a larger sample of students prior to and after joining boarding school. Similarly, follow-up research tracking boarders over the medium to longer term (including through post-school education and work) might also be useful. Future research may also consider whether changing from day to boarding status and from boarding to day status within the same school shows a different pattern of gains or declines in academic and non-academic outcomes. To more fully understand the boarding experience, future studies may compare boarding students with comparable students who remained to attend school in their home regions and who did not move away to boarding school to ascertain whether their academic and non-academic trajectories differ significantly.

8.7.4 Causal inference.

In assessing any possible causal ordering of the role of boarding school in academic and non-academic outcomes it is important to note: (a) there appear to be prior differences between day students and boarders, and (b) it is unlikely that most boarders will ever be day students (and vice versa). These limitations are largely insurmountable in the present design and, indeed, apply in many educational studies. Thus, it is acknowledged that this study cannot satisfy conditions for causal inference that rely on counterfactual conditional statements that would state what would be the case if a boarder were a day student and a day student were a boarder (Morgan & Winship, 2007).

However, the current study attempted to overcome this limitation through inclusion of a broad set of covariates in order to adjust for prior differences and thereby enable closer estimates of the unique contribution of student type. It is acknowledged that this is not as strong an approach as propensity score matching (e.g., Rosenbaum & Rubin, 1985; see also Austin, 2011; Caliendo & Kopeinig, 2005; Dehejia & Wahba, 2002; Fan & Nowell, 2011) or nearest neighbour matching (e.g., Rosenbaum, 2002; Rosenbaum & Rubin, 1985; Stuart, 2010), which are probably not feasible for an applied educational study of this type. The benefits of such matching is that while initially the "treated" and "untreated" groups may not be directly comparable, as they may systematically differ on baseline data, propensity score matching and nearest neighbour matching allow students to be selected who are matched on baseline data and therefore observed variables are more generally comparable (see Rosenbaum & Rubin, 1985;Rubin, 1973).

Future research could collect data with this issue of causality in mind; for example, collecting data that track any students that move from boarding status to day status and vice versa. Alternatively, tracking students as soon as they lodge an application to boarding school (thus, likely to attend subsequently and enable pre- and post-transition comparisons) or tracking students whose older siblings are at boarding school (thus, likely to attend themselves in the future and enable pre- and post-transition comparisons). Although these approaches do not definitively support causal inference, they may represent another research design and approaches to understanding the issue.

It must be recognised that attending boarding school represents a choice in type of education for many students and for others is due to necessity and limited access to educational resources locally, and therefore potential issues of self-

selection and bias in the type of students who are likely to board. Hence, while not a perfect solution to the issue of causal inference, these recommendations represent another means of assessing for any change once students commence boarding school. Indeed, having more extensive data on students prior to attending boarding school provides a greater opportunity of understanding prior differences in factors such as achievement and personality and their influence on subsequent boarding outcomes. As has been speculated earlier in this thesis, it may be that parents select children for boarding school based on some of these characteristics (i.e., prior achievement, personality, family history with boarding school) and this represents an opportunity to extend the research of Lawrence (2005) by conducting in-depth qualitative research that seeks to elucidate factors of selecting students into boarding school and the connection between such reasons and subsequent outcomes.

8.7.5 Qualitative data.

This study was a quantitative one, and while there are many merits of such a design to scope out new territory and gain an insight into patterns of findings that may exist, there are limits to what can be interpreted about the nature of significant and non-significant effects found in this study. Qualitative data would be very useful to better contextualise the processes under study that quantitative data are unable to explain. While quantitative research is useful to identify particular aspects of whether the boarding experience affects academic and non-academic outcomes more broadly, a qualitative design could enable data that probe more deeply into the experience, therefore allowing a different set of questions to be answered (Berg & Lune, 2012; Creswell, 2008; Elias et al., 2012; Gaztambide-Fernández, 2011; Marshall & Rossman, 2011; Maxwell, Perry, & Martin, 2008; Robson, 2011; Shane et al., 2008). For example, qualitative data may help explain why there are fewer differences in

outcomes between day students and boarders than may first be expected based on previous research and students' accounts of boarding school. It may be that there are particular types of students, from particular families, bringing a unique repertoire of experiences that align with particular types of boarding school environments to facilitate certain academic and non-academic outcomes. It may be that there are certain experiences or expectations of students early on in the boarding experience that allow boarders to catch up to their day student peers and adapt to the experience of living away from home (e.g., Cree, 2000; Fraser, 1968; Marsh, 2011; White, 2004a).

A number of the theoretical perspectives reviewed earlier in this thesis highlight the importance of personal resources, relationships, and interaction of the individual and contextual environment in promoting developmental outcomes. Such "lived" detail on how quantitative models operate can best be derived from a qualitative study. A qualitative focus may also shed light on how boarding staff, teachers, and parents may be able to optimise the role boarding school plays in the development of academic and non-academic outcomes. Moving beyond the school context, further investigations could likewise explore the role of a student's home and community in their boarding experience by using a qualitative design.

8.7.6 Appropriateness of item parcelling.

As noted in Chapter 4, there are ongoing and current concerns regarding the appropriateness of using item parcels. A number of commentators are less concerned about the limitations of item parcels (e.g., Little et al., 2002; Little et al., 2013), while others have more robustly demonstrated weaknesses associated with their use (e.g., Marsh et al., 2013). Marsh et al. (2013) argued that at a minimum unidimensionality must be demonstrated to ensure there are no factors that limit the justification to

parcel items (e.g., there must be few or no major cross-loadings). Prior to parcelling, the dimensionality of factors was examined and found to be unidimensional based on initial CFA and reliability analysis (see Little et al., 2002). In the current study, because this thesis is not centrally concerned with scale development, latent means, and measurement invariance (see Marsh et al., 2013), it was deemed appropriate to use item parcels. Future research should also take these concerns into consideration and attempt to demonstrate unidimensionality, few or no major cross-loadings, and sound reliabilities of factors (see Marsh et al., 2013).

8.7.7 Other residential settings.

The current study has focused on boarding school as an example of a residential education experience. However, this research is not conducted to the exclusion of young people in other residential settings where academic and non-academic outcomes may equally apply. There are many young people who live "in residence" or "in care" settings who for one reason or another are unable to live at home with their family. For example, it may be that these young people are in foster care or residential care facilities, in hospital, in juvenile detention, in sporting institutions for intensive training, or in school camps. Thus, given the key similarities with youth residing away from home and the importance of educational outcomes in these situations, the research design and findings are potentially generalisable to settings beyond boarding school. Research that seeks to empirically assess the extent to which this is the case would provide further insight into the academic and non-academic outcomes of youth who live away from home for their schooling.

8.7.8 Additional measures and processes.

The current research included a broad spectrum of covariates and academic and non-academic outcomes in an attempt to understand the complex nature of

academic and non-academic development in the boarding school context. Even though the bulk of variance in student outcomes appears to be explained by the measures utilised in the current study, it is important to consider whether the lack of findings is a function of not including other measures, and this is worthy of further investigation. After prior variance, personality was found to be a strong influence on academic and non-academic outcomes. This finding could be further substantiated by utilising other measures or objective measures of personality. Additional measures that explore the role that significant people such as peers, parents, and teachers play in the lives of young people in boarding school would be informative. Also relevant to research design, the present study employed a variable-centred approach to studying boarding school. Future research might consider person-centred approaches to identify types of boarding students or groups of boarders with particular profiles and the potentially different experiences at school. A broader measure of what it is to be a boarder, apart from student type, is also recommended (see previous discussion). This may include better understanding the boarding experiences of the different types of boarders; i.e., full boarders vs weekly boarders vs flexi-boarders, etc. For example, are there differences in relationships with parents for different categories of boarders? Is this effect moderated by modern communications? How does an individual's view of the boarding experience, or an individual's or parent's reason for attending boarding school impact academic and non-academic outcomes?

Data analysis was limited due to the absence of multi-level modelling as a consequence of having insufficient units at level 2 (only 12 schools). Although the present study utilised the "complex" command (Muthén & Muthén, 1998–2012) to adjust for standard errors arising from the hierarchical nature of the data, future research should seek to collect data from a greater number of schools. In this way,

multi-level SEM can be conducted to supplement the student-level analyses conducted in this study.

Another issue concerns the achievement measure used to assess prior academic achievement in this study. This construct was based on students' results in an annual NAPLAN assessment before the survey period and as students only sit this assessment every two years, it could only be employed as a covariate and not as an outcome. Future research would be enhanced by including a post-survey achievement measure to more specifically measure the role of boarding in academic achievement.

As mentioned previously, it would also be interesting to collect real-time information (e.g., Malmberg, Little et al., 2013; Malmberg, Woolgar et al., 2013) about day students' and boarders' daily experience. While the current study aimed to assess differences in academic and non-academic outcomes across a year, real-time data collection could assess differences in student experiences within a day, across days or weeks to better understand the influence of the individual, students' subject teachers, and students' residential circumstance on school outcomes.

8.7.9 Further integration of theoretical and empirical perspectives.

The current research was in many ways exploratory given the limited scope of previous research. This now sets the stage for more detailed and nuanced research, particularly from a theoretical and empirical perspective. For example, based on ecological, attachment, and PYD theories, future research may possibly include relationships with boarding peers compared with day peers, relationship with boarding house staff compared with other school staff, and the specific nature and extent of boarding house activities in order to go beyond the "social address" factors in the current study in order to better understand how individuals experience certain

interactive processes within contexts—i.e., process-context models and person-process-context models—and how these processes contribute to developmental outcomes (Bronfenbrenner, 1986). With this in mind, should personality, for example, be more appropriately conceptualised as a covariate or as a personal characteristic that influences the way other aspects of the boarding house environment are perceived, experienced, and moderated? Understanding these processes may shed light on differential boarding effects. This may also include research that follows specific layers of ecological systems theory and how this might translate into specific aspects of research design. While the current study attempted to incorporate aspects of the chronosystem "processes" referred to by Bronfenbrenner (1994, 2000; see also R. Lerner et al., 2012), longer-term studies (previously discussed) are warranted to investigate models of process-person-context-time (Bronfenbrenner, 2000).

PYD perspectives highlight that the strengths of youth are developed through the developmental opportunities in their ecologies (e.g., Benson et al., 2011). Further research could seek to identify particular developmental opportunities associated with the boarding school experience and how these may be distinct from the day school experience. Future research could compare differences in day students' and boarders' developmental assets—skills, experiences, relationships, and behaviours—and how these affect academic and non-academic outcomes (Benson, 2003; R. Lerner, Lerner, Lewin-Bizan et al., 2011). Similarly, what challenges do boarders and day students face in their daily lives, how do these challenges differ between these two groups of students, and what skills or competencies do they develop or employ to successfully overcome these challenges (see Larson, 2006)? Research may also consider whether purposeful planning of the boarding "program" has an

influence on outcomes. This may also tie in with further investigation into the role ECAs may play through the inclusion of a greater range of indicators of ECAs and out-of-school time commitments (Marsh, 1991b), as the aggregate index of ECA participation in the current study is limited in what it can reveal about the specific ECAs in which boarders were disproportionately engaged. This may help clarify the significant extracurricular effects in the study and also provide more nuanced insight into boarding school life. Further investigation could consider aspects of breadth and intensity in ECAs, rather than the more limited assessment of range of participation (i.e., breadth) applied in the current research (see Bohnert et al., 2010; Busseri et al., 2006; Fredricks, 2012; Marsh & Kleitman, 2002). Similarly, the boarding experience could be more broadly viewed in terms of breadth and intensity, rather than just participation in boarding or not (i.e., boarding/day status). In terms of stage-environment fit, how could mismatch be better assessed other than consideration of negative effects on well-being as was the case in the current study? Much of this ties in with the notions described above of further contextualising the boarding experience as each person's unique boarding (or day) experience will differ to some degree, for example, in sense of belonging, interactions and relationships with others, or engagement in activities within the boarding house.

While attachment theory was used as a perspective to assess what effect living away from home (i.e., parents, family, childhood friends) might have on academic and non-academic outcomes, further research could assess the differences in types of attachments (e.g., secure vs. insecure) with significant others for day students and boarders. This could include measures of attachment (Adolescent Separation Anxiety Test; Resnick, 1989; Resnick & Haynes, 1995; see also Freeman & Brown, 2001; Scott et al., 2011)—for example, with prosocial peers or adults—

that the boarding experience might offer and how these might influence different types of boarding house experiences (e.g., Ronen & Seeman, 2007). Opportunity exists to further understand the distinct differences in day students' and boarders' attachments, and indeed, how they may overlap. For example, who are the significant peers and adults for these students and what is the nature of these attachments? What role does peer, parent, and teacher relationships have in psychological well-being and how does any hierarchy in the specific patterns of relationships change throughout the boarding experience and across adolescence in comparison to day students? Assessing both peer and adult relations within the boarding house and juxtaposing these against those within the day school provides another a means to better understand differences in the role of boarding school.

As is discussed in Appendix A, an experiential education perspective provides another opportunity to contextualise the boarding experience. Further research could examine whether boarding is a unique experience distinct from the day school experience and whether any differences result in significantly different academic and non-academic outcomes. It may be that different experiences facilitate similar growth and development, or there may be optimum experiences in the boarding environment which can facilitate greater growth in these areas.

8.7.10 Measuring developmental trajectories.

The current approach is significant because it utilised longitudinal data analysis to extend previous boarding school research by yielding data relating to students' outcomes across a year at school. The longitudinal data were critical to validating the model over time and testing the predictive capacity of the model while controlling for prior variance (Farrell, 1994; Lazarus, 1990, 2000; Martin & Marsh, 2008a). As indicated previously, future research might look to assess academic and

non-academic outcomes over an extended period of time or at multiple developmental stages, thus allowing the causal ordering of constructs to be assessed (Ferrer & McArdle, 2003; Lazarus, 2000).

While these findings represent a significant advance in our understanding of the role of boarding school, they should be interpreted with caution given the relatively short timeframe (one year) over which data were collected. Developmental trajectories can be mapped with greater accuracy when measurement is undertaken at numerous time points. This would allow predictive modelling to be expanded across key points pre- and post- the boarding experience. In doing so, the academic and non-academic outcomes of boarders could be better understood in relation to developmental contexts, thus allowing parents and schools insights as to how to best tailor the boarding experience to yield positive developmental outcomes.

Future research might also collect data over more than two time points. This would enable, for example, latent growth modelling as a method of assessing growth and development of academic and non-academic outcomes over time as well as the ability of key covariates to predict outcomes due to the boarding experience (Stoel, Roeleveld, Peetsma, van den Wittenboer, & Hox, 2006). Greater understanding of students' developmental trajectories (e.g., Australian Institute of Family Studies, 2013) and the role of student type (day/boarding student) in predicting academic and non-academic outcomes could be used to better inform policy, practice, and interventions to assist particular students attain better developmental outcomes.

8.8 Chapter Summary

This chapter has discussed key findings from the research questions proposed earlier in this thesis. Noteworthy significant and non-significant findings resulting from the study have been discussed. Importantly, a number of salient theories and

perspectives have been integrated to better contextualise and understand these findings. Further, various implications for subsequent theory, research, and methodology have been discussed. This has resulted in a number of suggestions for research methodology, research, and researchers. The results have important implications for key groups involved in boarding—boarding school administrators, boarders (including potential boarders), and parents—and how each of these can further develop the academic and non-academic potential of the boarding experience was discussed. Finally, limitations of the current investigation and possible future directions for research into the role of boarding school were provided.

CHAPTER 9: CONCLUSION

Schools represent a microcosm of society, acting as a key socialising agent, in concert with and in addition to that of the home, in developing academic and non-academic outcomes of young people (Eccles & Roeser, 2011; Wigfield, Eccles, & Rodriguez, 1998). In many national contexts, boarding schools represent a significant sector on the educational landscape. However, there has been surprisingly little theorising and rigorous research assessing their role in students' academic and non-academic outcomes. The present study sought to address this gap in knowledge and research. In the majority of academic and non-academic factors, the study found parity between day students and boarders in terms of gains or declines in academic and non-academic outcomes. With regards to the few factors where significant difference was evident, the findings tended to favour boarders. Although the boarding experience does not seem to confer greater advantage on boarders than these schools provide day students, it is significant to note that under a robust research design, there was little evidence of adverse affects on academic and non-academic outcomes of attending boarding school for the students sampled. These findings hold implications for parents considering their children's schooling options, boarders seeking to maximise the outcomes of their schooling, educational administrators managing boarding (and day) students in their school, and researchers investigating the effects of educational structures on students' academic and non-academic development.

Boarders live in a group residential environment, sharing a boarding house, social life, and trials and tribulations during important years of development. They often share extended periods of time and space with same-age peers, or older and younger students. They are involved in a range of academic, social, and

extracurricular activities. Boarding schools often have their own unique customs and practices (e.g., Cookson, 2009; Cree, 2000; Duffell, 2000; White, 2004a; Williams, 2011). Cree (2000) describes the complex interaction between the boarders' home culture and that of the school culture as a source of academic, social, emotional, physical, and spiritual development (see also White, 2004a; Yeo, 2010). While all schools to some extent act as agents of socialisation, the boarding context appears to provide a unique atmosphere of activities, interactions, values, and culture to develop the students in its care.

Taken together, the findings of the present study hold substantive and methodological implications for researchers studying the contribution of boarding school to student outcomes. Given the dearth of prior research and theorising in this area, the most significant yields of the current study are to identify the broad nature of the role of boarding school in youth outcomes and to set the stage for future research that can more fully disentangle this role. The findings are also relevant to practitioners such as administrators, teachers, and boarding staff who seek to enhance the academic, social, and emotional growth of students while in their care. Above all, the findings are of relevance to boarders and their families. Few parents are entirely comfortable sending their children away for schooling and many do so out of necessity or to access educational resources that may not be available in their local context. The findings support a growing body of research that indicates that contemporary boarding can be a positive experience for many students, allowing them to meet their educational goals while also maintaining positive relationships with family, teachers, and peers.

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APPENDIX A: CONCEPTUAL AND EMPIRICAL REVIEW—EXPERIENTIAL EDUCATION

A.1 Introduction

Proponents of boarding school attest that boarding offers something unique through the experience of living in community in a residential setting (e.g., Anderson, 2005; Christ Church Grammar School, 2013; Cree, 2000; Lawrence, 2005; New England Girls School, n.d.; White, 2004a). However, this perspective is often based on the assumption that boarding offers something significantly different from day school education and that this distinction can have positive implications for boarding school students. To explore this assumption, this thesis considers how an experiential education perspective may differentiate boarding from the day school experience. The potential impact of this perspective on the academic and non-academic outcomes of day students and boarders is further investigated.

Experiential education serves as an overarching philosophy which includes experiences such as outdoor and adventure education (Hattie, Marsh, Neill, & Richards, 1997), environmental education (Bogner, 2002), gap year programs (Martin, 2010a), and other educational practices such as active learning, cooperative learning, and service learning (Roberts, 2011) which utilise "experience" as the vehicle for development (see Figure A.1). Experiential education is a philosophy of education that emphasises the personal experiences of the learner in their environment—that is, "learning by doing" through "direct experience" (Roberts, 2011; see also Adkins & Simmons, 2002). McBrien and Brandt (1997) have defined experiential education as "any form of education that emphasises personal experience of the learner rather than from lectures, books, and other second-hand sources" (p. 38). Fundamentally, the experiential education perspective takes into

consideration the interaction of students with the experience and teachers involved, with a view to generating new learning which can be applied and integrated for the future (see Itin, 1999; Kolb, 1984). Teachers and students both act as agents of social change in experiential education (Breunig, 2005). These transactions are central to the philosophy of experiential education (Itin, 1999).

The Association for Experiential Education (AEE) has defined experiential education as "a philosophy and methodology in which educators purposefully engage with learners in direct experience and reflection in order to increase knowledge, develop skills and clarify values" (AEE, n.d., para. 3). A key aspect of the definition of experiential education relevant to a study of the role of boarding school is the engagement and interaction between learners, educators and learners, and the learner and the environment to which they are exposed (Itin, 1999). While there is some evidence to suggest that experiential education has academic and non-academic benefits, as a developing field of education it is often considered to be "experience rich and theory poor" (Smith, Knapp, Seaman, & Pace, 2011; see also Roberts, 2008). The current research aims to apply key elements of the experiential education philosophy to the experience of students attending boarding school to assess its role in their academic and non-academic development, at the same schools and over the same period of time.

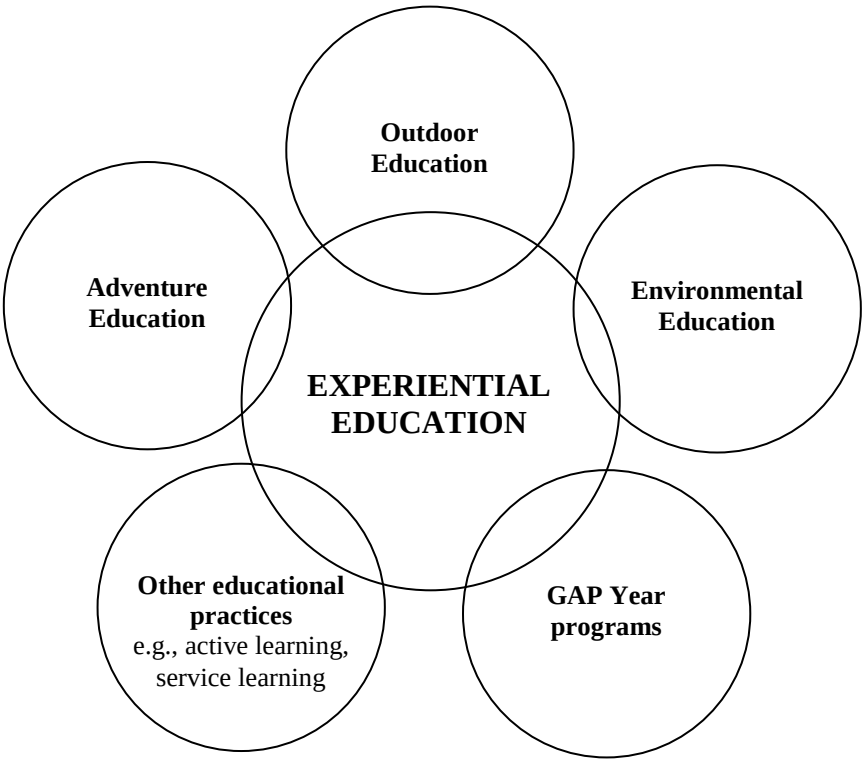

Figure A.1. Relationships between experiential education and other related programs or philosophies of education which use experiential education as a basis.

A.2 Experiential Education Philosophy and Experiential Learning Theory

The experiential education philosophy has relevance to boarding school as both contexts are based around an experience in which "learners are engaged intellectually, emotionally, socially, politically, spiritually, and physically in an uncertain environment where the learner may experience success, failure, adventure and risk taking" (Itin, 1999, p. 93). Similarly, students are engaging and interacting with the environment, with other students, and teachers through this experience. This perspective would suggest that immersion in the boarding experience "challenges the learner to explore issues of values, relationship, diversity, inclusion, and community"

(Itin, 1999, p. 93). This philosophy of education stems from earlier work of John Dewey (1938/1997), Kurt Hahn (Hahn, 1958; see also Flavin, 1996; Gass, 2003), and Paulo Freire (1971) who focused on the active involvement of the learner with the experience and how the experience compels change in the individual. Whether this is also the case for boarding schools is unknown. While Dewey's (1938/1997) ideas of "progressive education"—that of student experiences being central to learning—formed the basis of modern experiential education (discussed below), he also added a caveat to this philosophy, that:

> The belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative. Experience and education cannot be directly equated to each other. For some experiences are mis-educative. (p. 25)
>
> It is not enough to insist upon the necessity of experience, not even of activity in experience. Everything depends upon the *quality* of the experience which is had. (p. 27)

According to prevailing models, experiential learning involves a process which begins with direct experience and then cycles of reflection and further learning (Seaman, 2008). This can be seen in the *experiential learning model* (Figure A.2) proposed by David Kolb (1984; see also Gass, 2003) and adapted to the boarding experience. His *experiential learning theory* (ELT) illustrates the interaction of the learner with concrete learning experiences, reflecting on experiences, thinking about experiences and forming a new understanding, followed by active experimentation, application, and integration of this learning how to live in the boarding environment.

Kolb defined experiential learning as "the process whereby knowledge is created through the transformation of experience. Knowledge results from the

combination of grasping and transforming experience" (Kolb, 1984, p. 41). Two key aspects are emphasised in this model: firstly, the value of concrete and immediate experiences on the learner, and secondly, the meaning and learning created as a result of reflection and feedback processes (Elkjaer, 2009). This theoretical perspective poses the question as to whether boarding is a unique experience from that of day students and which purposefully causes reflection, feedback, and growth in academic and non-academic aspects of the individual.

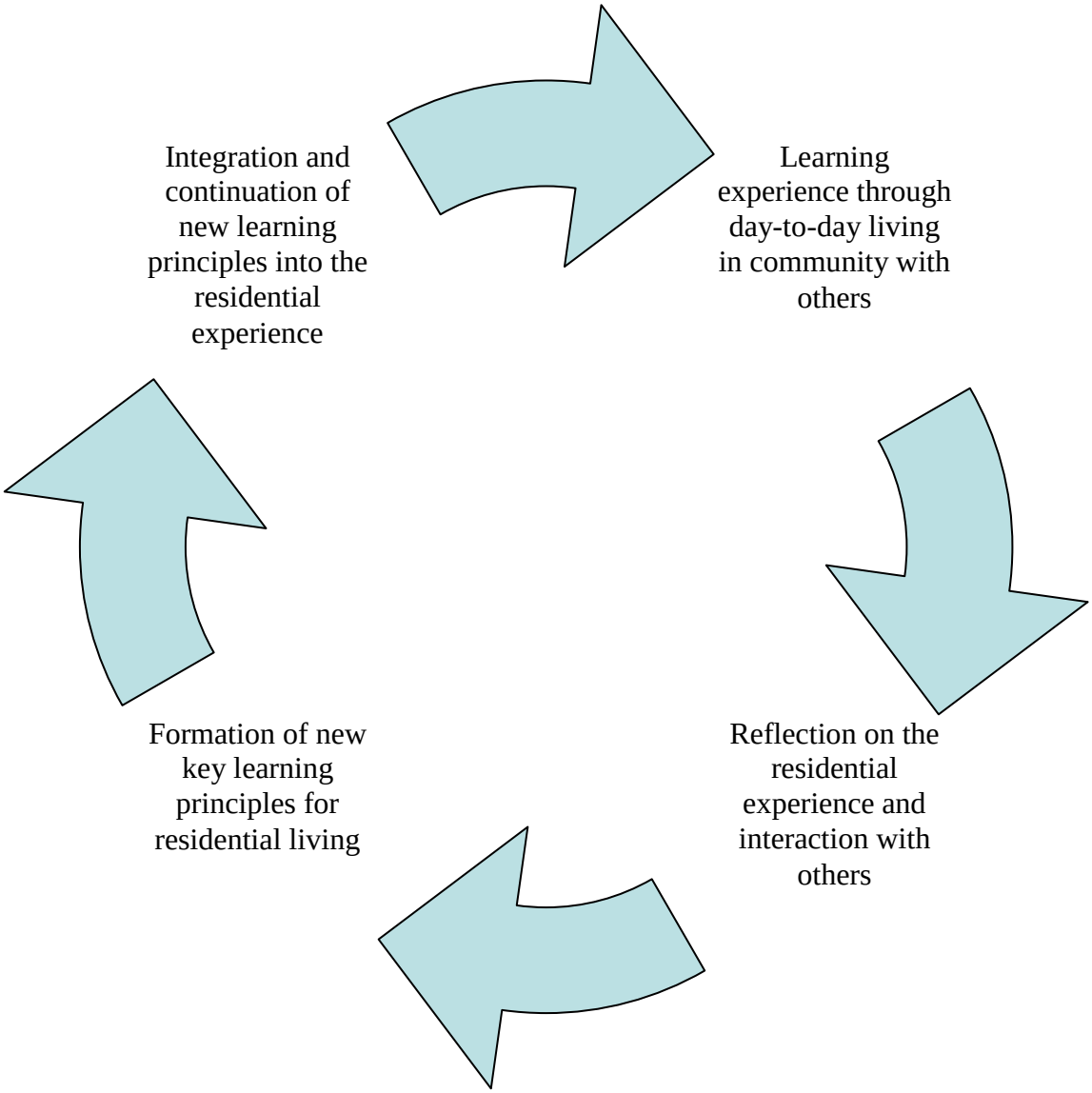

Figure A.2. Adaptation of the experiential learning model proposed by Kolb (1984) to the residential experience of attending boarding school.

Experience is a complex and multilayered phenomenon which involves interactions between the body, sensory input, and neurological processing (Fox, 2008). Experiential education has the potential to act as positive youth development by offering opportunities and important support structures to young people (discussed previously under Positive Youth Development). Garst, Browne, and Bialeschki (2011) concurred with these key elements of experiential education camps, stating that:

> Opportunities foster positive development by offering novel, challenging, and engaging experiences that effectively open the learning pathways of young people. Supports include the people, programs, and intrapersonal skills that allow young people to seek new information and test their existing knowledge in a safe environment. Together these supports and opportunities encompass the variety of ways a youth development program might foster healthy growth among its participants. (pp. 74–75)

Garst et al. (2011) also noted that the camp experience represents "more than a location or a program; it encompasses the affective, cognitive, behavioural, physical, social, and spiritual benefits that youth receive during and after the camping experience" (pp. 73–74). Goldenberg and Pronsolino (2008) have added to this understanding, suggesting that one of the most important aspects of experiential education comes through individuals facing challenges together as a group. Participants in their study gained greatest value from the shared experience and warm relationships with others in the group—that of getting support from and helping others.

It is clear that some of the features noted above about experiential education are also in common with the boarding experience. Contemporary boarding houses

are generally safe and supportive environments. The boarding experience is a complex and multilayered one which includes a range of transactions between an individual and others who share that environment (other boarders and staff) as well as interaction with the physical residential environment (see Anderson, 2005). Again, this was discussed in greater detail under Ecological Systems Theory (see also Sibthorp & Morgan, 2011). The boarding experience also encompasses academic, social, emotional, physical and spiritual domains (Itin, 1999). However, whether this affects a different pattern of changes in the academic and non-academic development of day students than boarders has not yet been studied in detail and hence is the reason for the current study.

A.3 Previous Research into the Effects of Experiential Education

Limited research has been conducted in the area of experiential education, in part because of the variety of programs and the lack of commonality in factors which potentially cause change. Research into experiential education has identified a number of confounding effects which need to be taken into account and which are worth considering in a study of the boarding experience. Ewert and Sibthorp (2009) proposed a range of variables that must be accounted for when assessing the effects of experiential education, including demographics (e.g., age, gender, socio-economic status), prior variance of outcomes, and group characteristics (e.g., in the case of this study variables such as school structure and school-average achievement) which have previously been shown to be important predictors of the outcomes of experiential education (see also Goldenberg, Klenosky, O'Leary, & Templin, 2000; Goldenberg, McAvoy, & Klenosky, 2005). Outcomes of experiential education programs have also been found to be influenced by the length of program (time) and the ages of participants (Hattie et al., 1997). In the current study, the academic and

non-academic outcomes of day students and boarders are considered after controlling for a number of covariates such as demographics, including age, gender, parents'/guardians' education, language background and Indigenous cultural background, as well as prior achievement, personality traits (e.g., agreeableness, conscientiousness, extraversion, neuroticism, openness), school-level factors (e.g., single-sex/co-educational, school-average achievement), and prior variance to determine the unique influences of the boarding experience.

A.4 Effects of Experiential Education

Experiential education has seen a proliferation of programs of various types since its conceptualising by Dewey, as well as different experiential elements since the origin of modern adventure education attributed to Kurt Hahn (Hattie et al., 1997). As a result, while a considerable body of research into the effects of experiential education exists, differences in program elements, structure, and outcomes measured make comparison difficult. This has resulted in a number of mixed or non-significant findings of the effects of experientially-based programs. For example, there are minimal and/or inconsistent findings for resiliency skills and grade point average (Ardern, 2006), well-being (Durr, 2009), interpersonal relations (Gray, 1997), lower-order thinking skills (Ives & Obenchain, 2006), same-sex relations, and emotional stability (Purdie, Neill, & Richards, 2002). Positive effects have been found for academic learning (Eyler, 2009), academic motivation (Martin, 2010a), higher-order thinking skills (Ives & Obenchain, 2006), enjoyment of school (Purdie et al., 2002), identity development (Duerden, Widmer, Taniguchi, & McCoy, 2009), self-concept (Larson, 2007; Marsh, Richards, & Barnes, 1986; Purdie et al., 2002), self-esteem (American Camp Association [ACA], 2005), parent relations (Purdie et al., 2002), and peer relations (ACA, 2005; Henderson, Whitaker,

Bialeschki, Scanlin, & Thurber, 2007). Of interest to a study of boarding school is the finding that residential campers (as opposed to those who only attended during the day) had gains in positive identity, social skills, physical and thinking skills, and positive values and spirituality, and that this finding represents a fundamental difference between the day and residential experience of these programs (ACA, 2006).

Most notable of all the studies of the effects of experiential education is the meta-analysis conducted by Hattie et al. (1997). This study demonstrated positive gains of adventure education on academic achievement (Effect Size or ES = .21), achievement motivation (ES = .15), general self-concept (ES = .33), self-efficacy (ES = .21), cooperation (ES = .31), peer relations (ES = .20), and emotional stability (ES = .11). Importantly, effects due to adventure education programs improved and were sustained after the conclusion of the program and improved as the length of the program and ages of participants increased (Hattie et al., 1997; see also Hans, 2000; Neill & Richards, 1998). It would seem that there is some impact of experiential education on the academic and non-academic outcomes of participants in these programs and that there is a potential for a similar impact of boarding on the academic and non-academic outcomes of boarders. As this has not been extensively or rigorously investigated from this perspective previously, this study represents an opportunity to fill this gap in knowledge of the role of attending boarding school.

A.5 Boarding: A Residential Experience?

The experiential education philosophy adds to the various perspectives which can inform our understanding of the role of boarding school in academic and non-academic effects. It is evident that boarding offers a unique combination of living in residence (*residential* education) and through an experience (*experiential* education),

and one which places the individual student at the centre of that experience with other individuals. The net result of these perspectives is a *"residential experience"* (see Figure A.3) whereby students from different backgrounds are impelled to live in community, with greater access to a range of extra-curricular activities, allowing interaction with other students and alternate caregivers on a range of levels (intellectually, emotionally, socially, politically, spiritually, and physically), in an environment away from home, and which potentially generates new learning over time. The extent to which boarding exposes students to each of these experiences—and hence fosters a process of adaptive learning and overall development—is of central focus to the present study.

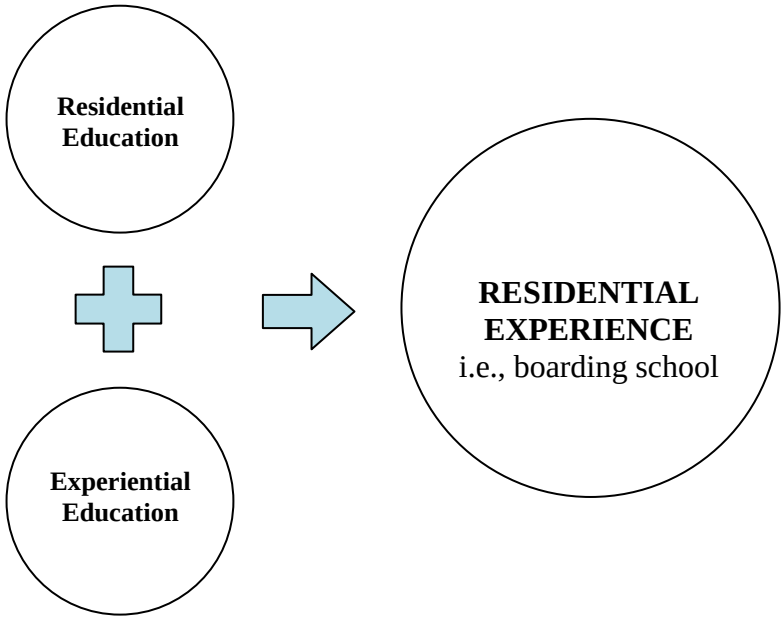

Figure A.3. Boarding school: A form of residential experience?

A.6 Discussion of Findings in Relation to Experiential Education

Experiential education is based on transactions between learners, the learner and educators, and the learner and the environment to which they are exposed (Itin, 1999). Immersion in the experience challenges the individual to explore individual-ecological contexts of values, relationships, and interactions with others. Central to the experiential education philosophy is the notion that the learner is actively involved in the experience and that this challenging environment compels change in the individual (see Dewey, 1938/1997; Gass 2003; Hahn, 1958). However, Dewey (1938/1997) contended that experience itself was unlikely to cause change, but instead emphasised the quality of the experience. Experiential learning theory (Kolb, 1984) also requires that meaning and learning is generated as a result of "learning by doing" through "direct experience" (e.g., Adkins & Simmons, 2002; Roberts, 2011) and that this results in the learner undertaking a process of reflection and feedback. Thus, the question to be answered is whether boarding is a unique experience distinct from the day school experience which causes purposeful reflection, feedback, and growth in academic and non-academic outcomes.

Experiential education serves as an overarching philosophy which includes a range of experiences and activities which utilise "experience" as the vehicle for development (Bogner, 2002; Hattie et al., 1997; Martin, 2010a; Roberts, 2011). The nature of the experience may differ and as a result yield differences in outcomes (see earlier discussion). Important to the current study, a residential component has been found to benefit a range of academic and non-academic outcomes (ACA, 2006). So too, a range of factors have been found to influence the outcomes of such experiences (e.g., demographics, prior variance of outcomes, group characteristics, length of program) (see Ewert & Sibthorp, 2009; Hattie et al., 1997). A meta-analysis

of the effects of experiential education by Hattie et al. (1997) found positive gains in academic outcomes (e.g., achievement, motivation, self-efficacy) and non-academic outcomes (general self-concept, emotional stability, peer relations). In comparison, this was not found to be the case in the current study, with general parity in gains and declines of academic and non-academic outcomes of day students and boarders (except for absenteeism and participation in extracurricular activities). What is still to be tested is whether boarders have greater gains or declines on these outcomes when compared to similar students who have stayed at home and attended local schools. A key recommendation from this thesis is further work seeking to establish in greater detail the nature of the boarding experience, as experiences may differ between boarders, to better understand how it might affect student outcomes (see below).

As was discussed relating to other theories and perspectives (see Chapter 8), it appears that boarding represents an experience which sustains boarders while they live away from home in order to attain similar academic and non-academic outcomes, although the mechanisms or processes remain unclear. Where boarding schools could further advantage boarders would be through adopting the core premises of the experiential learning philosophy – ensuring that meaning and learning generated as a result of the boarding experience is assimilated by the individual via a process of conscious reflection and feedback. In this vein, a number of boarding schools have begun to adopt a “residential curriculum” to better ensure that potential academic, social, emotional, cultural, and personal growth resulting from informal learning opportunities of living together in community in the boarding house, transfer additional academic and non-academic benefit to boarders (for example, see Appleby College, 2010; Deerfield Academy, 2013; Mondragon, 2012; Washington Academy, n.d.). In essence, the informal curriculum of learning and

development from the boarding experience is being formalised. As with the Positive Youth Development perspective (e.g., R. Lerner & Lerner, 2012), unless reflection and integration are programmed into experiences it is less likely that adolescents will reap the full value of such experiences.

It would appear that boarding offers a unique combination of living in residence – what might be termed a *"residential experience"* – distinct from living at home and therefore distinct socialisation experiences which shape the lives and academic and non-academic outcomes of boarders (e.g., Bronfenbrenner, 1970; Chase, 2008; Cookson & Persell, 1985; Cree, 2000; Cross & Frazier, 2010; Davies, 1989; Duffell, 2000; Finn, 2012; Fraser, 1968; Gaztambide-Fernández, 2009a; Khan, 2010; White, 2004a). The current study shows that while there is parity in gains and declines, for many boarders it is a generally positive experience of school, or at least, as positive as their day school counterparts. That is, the boarding experience is at best a developmental alternative that provides different opportunities and experiences and yet which results in similar outcomes for boarders and day students; in other words, there may be different paths which lead to general parity in academic and non-academic outcomes. Future research might compare the experiences of boarders using a person-centred approach to investigate for which types of students there is greater academic or non-academic growth. Similarly, future research might compare boarders in different boarding houses, or at different boarding schools, to investigate what combination of factors cause the greatest change. As was discussed earlier, boarding is more than just a student's status (i.e., being a day student or boarder) and future research should look to a multivariate definition of what it is to be a day student or a boarder.

APPENDIX B: IMPORTANCE OF ATTACHMENT PATTERNS—A SECURE BASE

Empirical evidence supporting Bowlby's attachment theory was first provided by Ainsworth and her colleagues (e.g., Ainsworth & Bell, 1970) with categories of attachment often simplified to secure versus insecure patterns of attachment. Since the early work of Bowlby and Ainsworth, the theory has been extended to include attachment in adults and other interactions which may be considered to include components of attachment behaviour; for example, teacher-student relationships (Kobak, Herres, Gaskins, & Laurenceau, 2012), peer relationships (Allen, 2008), and romantic relationships in adulthood (Tarabulsy et al., 2012).

A secure base represents an attachment figure or primary caregiver from which an individual (typically an infant or child) feels secure to explore the surrounding environment and, when necessary, can act as a safe haven and source of comfort to which to return (Allen et al., 2003; Bowlby, 1988; Waters & Cummings, 2000). This need for a secure base continues into adolescence (Bowlby, 1988) and it is argued that by this stage of development the attachment system is often represented by a "single general model of attachment organisation"—an overarching mentalisation of attachment relationships—displaying stability and predictive of future behaviour and interactions both within and beyond the family over time, especially if there is stability in their ecological environment (Allen, McElhaney, Kuperminc, & Jodl, 2004; Hesse, 2008; Scott, Briskman, Woolgar, Humayun, & O'Connor, 2011; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). A range of changes in the family environment, social stressors, or negative life events—such as illness, death, abuse, or divorce—can affect the stability of attachment patterns

from infancy to early adulthood, particularly from secure to insecure (Allen et al., 2004; Waters et al., 2000; Waters, Weinfield, & Hamilton, 2000). While the early period of attachment formation is critical, it is still possible for fundamental changes in attachment security (e.g., from insecure to secure) to take place later in life, such as in adolescence (Karen, 1998).

Longitudinal research by Allen et al. (2004) found that significant declines in security occurred over the course of adolescence due to intra-psychic, family, or major environmental stressors, whereas those with none of these risk factors later in adolescence trended toward increasing security over the next two years. Recent Australian research has revealed that transitional issues (i.e., stressors) for boarders—that is, anxiety and distress levels for those who moved to boarding school—were no higher than day students who also transitioned to a new secondary school (Bramston & Patrick, 2007). Similarly, Whyte and Boylan (2008) found that day students and boarders did not differ significantly in terms of general self-concept, emotional instability, or parent relations during their transition to high school. The support of peers, parents, and teachers appears to play critical roles in a smooth adjustment of students to boarding school (Bramston & Patrick, 2007; Han, Jamieson, & Young, 2000).

Parents typically fulfil the role of primary attachment figure during childhood; however, it is a natural part of adolescent development for there to be transformation in the parent-child relationship and transference to other significant attachment figures. While Duffell (2000) has been a strong critic of the British attitude of sending young children to boarding school, he accepts that children need to psychologically separate from family for their development into adulthood, and believes that boarding school may benefit some children from mid-adolescence.

Research has consistently shown that by early to mid-adolescence peers are valued as much as or greater as sources of companionship and intimacy (Ainsworth, 1989; Bowlby, 1969a; Freeman & Brown, 2001; Hazan, Hutt, Sturgeon, & Bricker, 1991). The decreasing reliance on parents as a secure base is normal autonomy-seeking behaviour of adolescence, an important process for growth which allows them to accomplish the major tasks of social development in adolescence and young adulthood, those of establishing long-term romantic relationships and finding productive careers (e.g., Allen, 2008; Hazan et al., 1991). In this way, adolescence is not necessarily a period in which attachment relationships to parents are relinquished, but instead represents a period of gradual transference of reliance to peers and others outside of the family (Allen, 2008). Indeed, boarding school may facilitate this process of independence from the family, albeit at a younger age than normal for some, with the boarding house representing an adjunct to the home, existing alongside the family as a source of socialisation (White, 2004a). The developmental needs in this regard are probably no different between day and boarding students. Although boarders may be more likely to be in close proximity and association with peers for a greater proportion of each day, both day students and boarders are likely to spend similar amounts of time connected to peers via other forms of communication (e.g., texting or social media).

The importance of secure relationships is that this schema of relationships provides individuals with the ability to regulate their emotions and thereby cope with challenges they may face without becoming overwhelmed (Kennedy & Kennedy, 2004; Kerns & Stevens, 1996; Kobak, Holland, Ferenz-Gillies, Fleming, & Gamble, 1993; Kobak & Sceery, 1988). Research has indicated that attachment security in adolescence exercises a similar effect on development as it does in early childhood,

again providing a secure base which allows exploration and the development of cognitive, social, and emotional competence (Allen et al., 2003; Moretti & Peled, 2004).

In spite of concerns raised about the effects of boarding school on relationships with parents, boarding school may represent a reprieve for some children from difficult home lives where the developmental and psychological needs of these children are not being met (Bowlby, 1952; Lynch, 1998; Power, 2007; Ronen & Seeman, 2007; Scott & Langhorne, 2012; Voyer, 2007). The potential impact of boarding on an individual's security of attachment is crucial and therefore an important consideration in this study.

The coping styles that evolve during early and mid-adolescence are built on earlier experiences and guide how an individual will cope in times of stress which occur later in life (Allen, 2008; Hesse, 2008). Research has shown that much of the stress that adolescents experience stems from everyday interactions and conflict within the family, with peers, or close friends (Nieder & Seiffge-Krenke, 2001; Seiffge-Krenke, 2006). Adolescents are generally found to exhibit an adaptive coping style when confronted by the normal stress of relationships and they can be creative to find alternative ways of coping when the usual attachment figures of friends or family members are unable to provide support (Syed & Seiffge-Krenke, 2013). Indeed, even under extreme stress, the support of peers has been found to be an important factor in maintaining the well-being of boarders (Ronen & Seeman, 2007). While boarding school may distance adolescents from a range of stressors (e.g., potentially family) it may put them closer to others (e.g., peers).

Most young people form attachments relatively easily and even in less than ideal circumstances the attachment system can remain very robust (Bowlby, 1969a).

However, in spite of this robustness, prolonged separation of children from a familiar caregiver, or frequent changes of caregiver may result in maladaptation and mental illness later in life (Bowlby, 1958). Separation from parents poses challenges for boarders in this regard, especially for overseas boarders who stay abroad for prolonged periods of time, unlike the usual challenges for children who may be separated from parents for short periods of time such as holidays or school excursions (Yeo, 2010). On balance, it is important to consider the effects of both earlier and later relationships on social development (Rutter, 2002) and this is particularly the case for boarders who typically enter boarding school in early adolescence when their internal working models of relationships are already mostly formed. Therefore, the question which arises in the context of the present study is what impact might boarding have on these adolescent relationships over time? The present study seeks to address this by assessing the impact of boarding on parent, peer, and teacher relationships and other well-being measures over a one-year period.

APPENDIX C: TIME 1, TIME 2, AND LONGITUDINAL SAMPLE CHARACTERISTICS

Table C.1

Time 1, Time 2, and Longitudinal Sample Characteristics

	Time 1 Sample		Time 2 Sample		Longitudinal Sample	
Student Type	Day (*n* = 3,651)	Boarding (*n* = 1,478)	Day (*n* = 3,694)	Boarding (*n* = 1,460)	Day (*n* = 1,377)	Boarding (*n* = 605)
			Gender			
Female	1,573 (43%)	653 (45%)	1,654 (45%)	542 (38%)	584 (42%)	250 (41%)
Male	2,067 (57%)	808 (55%)	2,016 (55%)	900 (62%)	793 (58%)	355 (59%)
			Age			
Early Adolescence (11 – 13 y.o.)	1,452 (40%)	338 (23%)	1,258 (34%)	346 (24%)	281 (20%)	71 (12%)
Mid Adolescence (14 – 15 y.o.)	1,308 (36%)	554 (38%)	1,483 (40%)	574 (39%)	640 (47%)	291 (48%)
Late Adolescence (16 – 19 y.o.)	873 (24%)	568 (39%)	946 (26%)	538 (37%)	455 (33%)	243 (40%)
Age (mean in years)	*14.14*	*14.86*	*14.29*	*14.78*	*14.80*	*15.16*
			Language Background			
English Speaking Background (ESB)	3,293 (91%)	1,260 (87%)	3,367 (92%)	1,293 (90%)	1,256 (92%)	543 (91%)
Non-English Speaking Background (NESB)	314 (8.7%)	187 (13%)	282 (7.7%)	151 (10%)	103 (7.6%)	51 (8.6%)
			Aboriginality (Indigenous cultural background)			
Indigenous	86 (2.4%)	183 (12%)	76 (2.1%)	190 (13%)	39 (2.8%)	48 (7.9%)
Non-Indigenous	3,565 (98%)	1,295 (88%)	3,618 (98%)	1,270 (87%)	1,338 (97%)	557 (92%)
			Prior Achievement			
Band 1 – 2	11 (0.3%)	13 (0.9%)	9 (0.2%)	18 (1.2%)	–	1 (0.2%)
Band 3 – 4	86 (2.4%)	82 (5.5%)	81 (2.2%)	109 (7.5%)	24 (1.7%)	25 (4.1%)
Band 5 – 6	661 (18%)	410 (28%)	652 (18%)	401 (27%)	206 (15%)	133 (22%)
Band 7 – 8	1,743 (48%)	677 (46%)	1,825 (49%)	638 (44%)	620 (45%)	280 (46%)
Band 9 – 10	1,150 (32%)	296 (20%)	1,127 (31%)	294 (20%)	527 (38%)	166 (27%)
(mean out of 10)	*7.47*	*6.90*	*7.48*	*6.95*	*7.75*	*7.24*
			Parent Education			
No formal qualifications	40 (1.1%)	39 (2.8%)	36 (1.0%)	32 (2.4%)	13 (0.9%)	7 (1.2%)
Intermediate School Certificate	103 (2.9%)	112 (8.0%)	122 (3.5%)	84 (6.2%)	46 (3.3%)	35 (5.8%)
Higher School Certificate	363 (10%)	291 (21%)	487 (14%)	270 (20%)	163 (12%)	116 (19%)
Trade/apprenticeship	439 (13%)	227 (16%)	481 (14%)	231 (17%)	169 (12%)	110 (18%)
Certificate/diploma	611 (17%)	267 (19%)	730 (21%)	261 (19%)	252 (18%)	117 (19%)
University degree	1,955 (56%)	461 (33%)	1,613 (46%)	458 (34%)	690 (50%)	190 (31%)
Parent Education (mean out of 6)	*4.96*	*4.24*	*4.75*	*4.32*	*4.87*	*4.36*
			School Structure			
Single-sex female	573 (16%)	196 (13%)	547 (15%)	131 (9.0%)	211 (15%)	50 (8.3%)
Single-sex male	1,128 (31%)	368 (25%)	1,036 (28%)	539 (37%)	475 (35%)	192 (32%)
Co-educational	1,950 (53%)	914 (62%)	2,111 (57%)	790 (54%)	691 (50%)	363 (60%)
			Personality (mean scores)			
Agreeableness	5.59	5.41	5.49	5.30	5.60	5.37
Conscientiousness	4.72	4.68	4.72	4.71	4.78	4.78
Extraversion	4.95	4.95	4.94	4.82	4.95	4.93
Neuroticism	3.66	3.75	3.67	3.78	3.72	3.75
Openness	5.04	4.85	5.02	4.79	5.10	4.87

N.B.: Tests of significance are reported in the body of the text. Also, differences between day and boarding students on dependent variables are presented in Chapter 5 (Table 5.6 and 5.7) and Appendix K (Table K.5 and K.6). Percentages are reported to 2 significant figures and therefore values for a variable in a column may not total 100%.

APPENDIX D: PRINCIPAL INFORMATION SHEET

The University of Sydney
Faculty of Education and Social Work, NSW 2006

AUSTRALIAN BOARDING SCHOOLS ASSOCIATION
PO Box 279, Virginia, QLD 4014
Ph 07 3863 4885

Exploring the Effects of Boarding School on Academic & Non-academic Outcomes: A Longitudinal Study of Boarding & Day Students

PRINCIPAL Participant Information Statement

The project is an ARC (Australian Research Council) Linkage Project (Research) jointly funded by the Australian Federal Government and the Australian Boarding Schools Association (ABSA).

Project Summary

Although there are 172 boarding schools in Australia, comprising approximately 23,000 students and yielding about $30m for the sector annually, there is surprisingly little rigorous and large-scale research assessing its effects on academic and non-academic outcomes. Work conducted has been limited to relatively few boarding schools or narrow outcome measures and findings tend to be susceptible to the idiosyncrasies of individual schools, with relatively limited applicability across the sector. The proposed Project – in partnership with the Australian Boarding Schools Association (ABSA) – seeks to address these gaps in knowledge and research.

The research will be conducted by a team from the University of Sydney from 2010 to 2012 and will be supported by a PhD student funded by the project, and personnel from ABSA.

If your school participates in the project, your school will be provided with a summary of findings that can be built into pedagogy and counselling to enhance boarding and day students' motivation and engagement. The report will also include tips that can be disseminated to parents/guardians and students that can enhance academic motivation and engagement. Survey items will transparently invoke key components of motivation, learning, engagement and academic factors to raise awareness of these vital dimensions in students' academic lives – an important part of enhancing and sustaining their motivation, engagement, and learning.

Researchers from the University of Sydney, Faculty of Education and Social Work:

Assoc. Prof. Andrew Martin	(02) 9351 6273	a.martin@edfac.usyd.edu.au
Dr Paul Ginns	(02) 9351 2611	p.ginns@usyd.edu.au

ABSA Partnership Team:

Dr Timothy Hawkes	Chair, ABSA
Mr Brad Papworth	ABSA, and PhD Student on the project

Commitment and Time for schools

What?	Who?	How long?
Paper and pencil survey	Approx 25 schools; students aged 11/12 yrs -17/18 yrs (Teacher supervised)	About 45-50 minutes each year
Brief digital survey (on hand-held digital device) – selected items from paper and pencil survey	10 Year 7 and 10 Year 11 students from each of 2 selected schools	About 5 minutes each day for four weeks

Withdrawal from the study
Participation in this study is entirely voluntary: schools or individuals are not obliged to participate and – if they do participate – they can withdraw at any time without prejudice or penalty. These conditions will be communicated to all individual participants – students and their parents – for each study within the project.

Release of results
Specific data collected in this study will be strictly confidential and only the researchers will have access to information on participants. A report of the study will be compiled and several publications may result, but individual participants will not be identifiable in these documents. There are no reasons to prevent general discussion about the project, keeping in mind the standard professional ethics regarding school business and individuals.

Benefits of the study
We expect the project to benefit both boarding and day students through targeted school-level reports on the key factors in the study, which will be provided to the school. In addition, the Project Team will work with all schools participating in the project to understand and use the results, through professional development opportunities. Lastly, we expect all students to benefit from the survey, as it will provide opportunities to contemplate aspects of their motivation and learning relevant to school and school-work.

Further information
Several meetings will be organised during the three years to keep principals informed of progressive findings and to provide opportunities for discussion. If you would like to know more at any stage, please feel free to contact any of the researchers listed above.

Complaint or concerns

Any person with concerns or complaints about the conduct of a research study can contact the Deputy Manager, Human Ethics Administration, University of Sydney on (02) 8627 8176 (Telephone); (02) 8627 7177 (Facsimile) or human.ethics@usyd.edu.au (Email).

This information sheet is for you to keep.

APPENDIX E: PRINCIPAL CONSENT FORM

The University of Sydney

Faculty of Education and Social Work, NSW 2006

AUSTRALIAN BOARDING SCHOOLS ASSOCIATION
PO Box 279, Virginia, QLD 4014
Ph 07 3863 4885

Exploring the Effects of Boarding School on Academic & Non-academic Outcomes: A Longitudinal Study of Boarding & Day Students

PRINCIPAL CONSENT FORM

I,.....…….....of…….…….....
Name (please print) (Name of school)

give consent to my school's participation in the Australian Boarding Schools Association/University of Sydney research project.

In giving my consent I acknowledge that:

1. The procedures required for the project and the time involved have been explained to me, and any questions I have about the project have been answered to my satisfaction.

2. I have read the PRINCIPALS Participant Information Statement and have been given the opportunity to discuss the information and my involvement in the project with the researcher/s.

3. I understand that my school or individual participants, including myself, can withdraw from the study at any time, without affecting my relationship with the researchers now or in the future.

4. I understand that my involvement is strictly confidential and no information about me, the school or individual participating teachers and students, will be used in any way that reveals our identity.

Signed: .....

Date:

Any person with concerns or complaints about the conduct of a research study can contact the Deputy Manager, Human Ethics Administration, University of Sydney on (02) 8627 8176 (Telephone); (02) 8627 7177 (Facsimile) or human.ethics@usyd.edu.au (Email).

APPENDIX F: PARENT/GUARDIAN INFORMATION SHEET

The University of Sydney

Faculty of Education and Social Work, NSW 2006
Professor Andrew Martin (Rm 919 Bld A35)
Ph/Fax. (02) 9351 6273/2606. Email: andrew.martin@sydney.edu.au

AUSTRALIAN BOARDING SCHOOLS ASSOCIATION
PO Box 279, Virginia, QLD 4014
Ph 07 3863 4885

Exploring the Effects of Boarding School on Academic and Non-academic Outcomes: A Longitudinal Study of Boarding and Day Students

PARENT/GUARDIAN PARTICIPANT INFORMATION STATEMENT

(1) What is the study about?

This study looks at student motivation and engagement, how they learn and study, what students think of themselves as students and about school, and some questions about boarding school and school generally. It is funded by the Australian Research Council under its Linkage Grants Program. The survey is administered to boarding students and day students and aims to better understand academic and non-academic outcomes for both groups of students. We also ask students some (anonymised) background questions such as about parent/guardian education to get a better understanding of these support factors in their academic and non-academic lives. By giving the survey to both boarding and day students, the study informs academic and non-academic development for all students. When we are finished, we would like to combine all the answers together in order to get a broad picture of how students in the project describe themselves, their involvement in class and school, factors that are related to their motivation and engagement at school, and see what strategies students use when going about their learning. It is hoped that the information gained will assist in development of new methods that will improve motivation and learning in boarding and day schools. It will be given to students this year and again next year – thus, consent covers the longitudinal data collection. This allows the researchers to better understand students' learning and engagement at school over time.

(2) Who is carrying out the study?

The study is being conducted by Professor Andrew Martin, Dr Paul Ginns (of Sydney University), Dr Tim Hawkes (Australian Boarding Schools Association, and Mr Brad Papworth (Australian Boarding Schools Association and Sydney University).

(3) What does the study involve?

If permission is given, both day and boarding students across all years in schools across Australia will complete a questionnaire. The questionnaire will ask students to provide demographic information, and respond to academic and non-academic self-report measures. In order to assess change and stability in the self-report measures, we will ask students to complete the same questionnaire one year later.

(4) How much time will the study take?

The paper and pencil survey will take approximately 45-50 minutes (one lesson) to complete. The digital survey will take approximately 5 minutes each day for four weeks. Teachers from your child's school will supervise the completion of the survey.

(5) Can I withdraw my child from the study?

Your decision whether or not to permit your child to participate will not prejudice you, your child's, or your child's school's future relations with the University of Sydney. If you decide to permit your child to participate, you are free to withdraw your consent and to discontinue your child's participation at any time without affecting your relationship with the school or the University of Sydney.

(6) Will anyone else know the results?

All aspects of the study at the individual student level, including results, will be strictly confidential and only the researchers will have access to information on participants. Reports from the study may be submitted for publication, but individual participants will not be identifiable in reports.

(7) Will the study benefit my child or myself?

We expect the project to benefit your child through targeted school-level reports on the key factors in the study, which will be provided to your child's school. In addition, the Project Team will work with all schools participating in the project to understand and use the results, through professional development opportunities. Lastly, we expect your child to benefit from the survey, as it will provide opportunities to contemplate aspects of his/her motivation and learning relevant to school and school-work.

(8) Can I tell other people about the study?

Yes.

(9) What if I require further information?

When you have read this information, Andrew Martin will be happy to discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free to contact Professor Martin, ph. (02) 9351 6273.

(10) What if I have a complaint or concerns?

Any person with concerns or complaints about the conduct of a research study can contact the Deputy Manager, Human Ethics Administration, University of Sydney on (02) 8627 8176 (Telephone); (02) 8627 8177 (Facsimile) or human.ethics@usyd.edu.au (Email).

This information sheet is for you to keep.

APPENDIX G: PARENT/GUARDIAN CONSENT FORM

The University of Sydney
Faculty of Education and Social Work, NSW 2006
Professor Andrew Martin (Rm 919 Bld A35)
Ph/Fax. (02) 9351 6273/2606. Email: andrew.martin@sydney.edu.au

AUSTRALIAN BOARDING SCHOOLS ASSOCIATION
PO Box 279, Virginia, QLD 4014
Ph 07 3863 4885

Exploring the Effects of Boarding School on Academic and Non-academic Outcomes: A Longitudinal Study of Boarding and Day Students

PARENT/GUARDIAN and CHILD CONSENT FORM

I, ... agree to permit .....……..... , who is aged ..... years, to participate in the research project – "Exploring the Effects of Boarding School on Academic & Non-academic Outcomes: A Longitudinal Study of Boarding and Day Students".

1. I acknowledge that I have read the Participant Information Statement for Parents/Guardians, which explains the aims and the nature of the study and what is required of my child.

2. Before signing this Consent Form, I have been given the opportunity of asking any questions relating to any concerns for child's wellbeing in relation to participation (and I have received satisfactory answers).

3. I understand that I can withdraw my child from the study at any time without prejudice to my or my child's relationship to the school or the University of Sydney.

4. I agree that research data gathered from the results of the study may be published provided that neither my child nor I can be identified.

5. I understand that if I have any questions relating to my child's participation in this research, I may contact Professor Andrew Martin at University of Sydney on 02 9351 6273 or by email at andrew.martin@sydney.edu.au., who will be happy to answer them.

6. I acknowledge receipt of a copy of this Consent Form and the Participant Information Statement for Parents/Guardians.

.....	.....
Signature of Parent/Guardian	Signature of Child
.....	.....
Please PRINT name	Please PRINT name
.....	.....
Date	Date

Please detach and return to the school (tear along)

APPENDIX H: TEACHER INSTRUCTIONS

THE UNIVERSITY OF SYDNEY

Professor Andrew J. Martin
Professorial Research Fellow
Australian Research Council Future Fellow

Faculty of Education and Social Work
University of Sydney
NSW 2006 AUSTRALIA
Telephone +61 2 9351 6273
Facsimile +61 2 9351 2606
andrew.martin@sydney.edu.au

STUDENT SURVEY

INSTRUCTIONS TO TEACHERS

Thank you very much for participating in this research.

Please do the following:

1. Complete the requested information on the front of the supplied envelope.
2. Hand out the surveys to your class/group. Ask students to check that all pages are in correct order.
3. Ask students to read over the cover page of the survey before commencing. You may like to highlight key questions where day or boarding students are asked to respond from different perspectives.

   e.g. page 10 *boarders give a boarding house or residence perspective whereas day students give a school perspective*

4. Tell students to answer the questions in a way that best reflects their thoughts and behaviours. Also, inform them that students will often have different answers from each other. The survey should be **completed under normal examination conditions**.
5. Tell students that they need to **answer ALL survey questions** and to write their answers clearly in **blue or black pen**. If they make a mistake, they should put a neat line through the incorrect response and ensure the new answer can be clearly read.
6. It is **recommended** that you read out to the class/group **Q10-13** and get students to complete them with your guidance. In **Q13**, focus on the bolded categories, as the other information are just examples (there are many more) of occupations which fit these categories. This will greatly assist the students move on from this page to the more important questions which follow and will mean less questions asked by the students.
7. Allow approximately **45 minutes** to complete the survey. You are permitted to briefly explain other survey questions to students if they ask for help (as per normal examination conditions).
8. If students complete the survey early, ask them to check their responses carefully. These students may read a book or go on with some other work but should not be dismissed until the entire class/group has finished.
9. After the survey has been completed, ask a student to collect the surveys and put them in the supplied envelope. This student should then seal the envelope and sign across the seal.
10. Return the sealed envelope to the designated collection area (e.g. school office).

Thank you for your assistance.

Andrew Martin

APPENDIX I: SURVEY INSTRUMENT—QUESTIONNAIRE

The University of Sydney
Faculty of Education and Social Work, NSW 2006

AUSTRALIAN BOARDING SCHOOLS ASSOCIATION
PO Box 279, Virginia, QLD 4014

STUDENT SURVEY: ACADEMIC AND NON-ACADEMIC LIFE

Dear Student

We invite you to assist in a University of Sydney project ("Exploring the Effects of Boarding School on Academic and Non-academic Outcomes: A Longitudinal Study of Boarding and Day Students") that looks at your motivation and engagement, how you learn and study, what you think of yourself as a student and school, and some questions about boarding school and school generally. It is administered to boarding students and day students. It aims to better understand academic and non-academic outcomes for boarding students and day students. By giving the survey to boarding and day students, the study informs academic and non-academic development for all students.

Students are being invited to complete a survey during school time, under the supervision of their teachers. The survey will be conducted at school and will take about 40-50 minutes to complete. When we are finished, we would like to combine all the answers together in order to get a broad picture of how students in the project describe themselves, their involvement in class and school, factors that are related to their motivation and engagement at school, and see what strategies students use when going about their learning. It is hoped that the information gained will assist in development of new methods that will improve motivation and learning in boarding and day school. It will be given to students this year and again next year. This allows the researchers to better understand students' learning and engagement at school over time.

We will not ask for your name. In this way we are able to keep each survey anonymous. Instead, we ask that you supply partial information from your first name, surname, date of birth, and last digits of your phone number. In this way we are able to keep each survey anonymous and yet are able to match the survey you do next year with the one you do this year. All aspects of the study, including results, will be strictly confidential, so your answers will not be shown to anyone. However, as the survey is anonymous, once it is submitted it cannot be withdrawn. All aspects of the study, including results, will be strictly confidential, so your individual answers will not be shown to anyone. All the surveys will be stored in a secured location. Reports from the study may be submitted for publication, but individual participants will not be identifiable in reports.

If you have any questions after reading this information, Professor Andrew Martin is available to answer them. Or, if you would like to know more at any stage of the study, please feel free to contact him at University of Sydney on 02 9351 6273 or by email at andrew.martin@sydney.edu.au.

Thank you for your assistance.

Professor Andrew Martin (Chief Investigator, Sydney University)
Dr Paul Ginns (Chief Investigator, Sydney University)
Dr Timothy Hawkes (Partner Investigator, Australian Boarding Schools Association)
Mr Brad Papworth (PhD Student, Australian Boarding Schools Association and Sydney University)

Instead of writing your name, please provide the following information as your identification number so we can match this survey with a survey you do later

First 2 letters of SURNAME	First 2 letters of FIRSTNAME	MONTH of birth	Last 2 numbers of HOME/MOBILE PHONE

STUDENT SURVEY: ACADEMIC AND NON-ACADEMIC LIFE

SECTION A: BACKGROUND INFORMATION

1. Grade/Year _____ **2. Gender (circle)** Female Male

3. Month of Birth _____ **4. Year of Birth** _____ **5. Age** _____ **years**

6. Have you ever repeated a grade at primary or high school? (circle) Yes No

7. What grade did you repeat? _____ grade

8. About how many days were you absent from school last term? About _____ days

9. What was the main reason for your absence? _____

10. What language is <u>spoken most</u> by YOUR FAMILY at home?	1 ☐	English	2 ☐	Italian	3 ☐	Greek	4 ☐	Spanish
	5 ☐	German	6 ☐	Macedonian	7 ☐	Arabic	8 ☐	Cantonese
	9 ☐	Vietnamese	10 ☐	Mandarin	11 ☐	Filipino/Tagalog	12 ☐	Indigenous
	13 ☐	Other	If other, which language?					

11. Are you Aboriginal or a Torres Strait Islander? (circle) Yes No

12. What is your parent's/guardian's level of education? (For each parent/guardian, please select <u>one only</u>)	**Female Parent/ Guardian**	**Male Parent/ Guardian**
No formal qualifications	1. ☐	1. ☐
Intermediate School Certificate (Year 10 or equivalent)	2. ☐	2. ☐
Higher School Certificate (Year 12 or equivalent)	3. ☐	3. ☐
Trade/apprenticeship (e.g. Hairdresser, Chef)	4. ☐	4. ☐
Certificate/diploma (e.g. Child care, Technician)	5. ☐	5. ☐
University undergraduate or Higher degree	6. ☐	6. ☐
Other (Specify: Female: Male:)	7. ☐	7. ☐

13. What is your parent's/guardian's main occupation? (For each parent/guardian, please select <u>one only</u>)	**Female Parent/ Guardian**	**Male Parent/ Guardian**
Manager (e.g. grazier/farmer/farm manager, magistrate, politician, general manager/director/CEO etc.)	1. ☐	1. ☐
Professional (e.g. accountant, architect, doctor/pharmacist/vet, educator/teacher, engineer, pilot, heath professional/registered nurse, managing director, minister of religion, solicitor/barrister etc.)	2. ☐	2. ☐
Technician or Tradesperson (e.g. baker/chef/food trade worker, hairdresser, jeweller, mechanic, electrician/builder/landscaper/plumber, shearer, ICT/telecommunications technician etc)	3. ☐	3. ☐
Community or Personal Services (e.g. childcare/youth worker, flight attendant, health worker/nurse/wardsperson, hospitality worker, police officer etc.)	4. ☐	4. ☐
Clerical or Administrative (e.g. accounts clerk/bookkeeper, mail clerk/postal officer, secretary/office manager, personal assistant etc.)	5. ☐	5. ☐
Sales (e.g. sales assistant, real estate agent, stock & station agent etc.)	6. ☐	6. ☐
Machinery Operator or Driver (e.g. bus/truck/train driver, machine/plant operator, mine worker, storeperson etc.)	7. ☐	7. ☐
Labourer (e.g. abattoir worker, cleaner, construction worker/labourer, factory/farm/food process worker, kitchenhand etc.)	8. ☐	8. ☐
No paid job	9. ☐	9. ☐
School student	10. ☐	10. ☐
Tertiary / University / TAFE Student	11. ☐	11. ☐
Other (Specify: Female: Male:)	12. ☐	12. ☐

STUDENT SURVEY: ACADEMIC AND NON-ACADEMIC LIFE

14. Are you a Boarding or a Day Student? (tick <u>one</u>) ☐ Day ☐ Weekly Boarder ☐ Full Boarder

15. Approximately, how far is your home away from the school? (tick <u>one</u> box only)

Within Australia						Overseas
☐	☐	☐	☐	☐	☐	☐
0 – 49 km	**50 – 99 km**	**100 – 199 km**	**200 – 499 km**	**500 – 1000 km**	**> 1000 km**	

16. What is your home postcode? _____

17. If you are a <u>Boarding Student</u>, how long have you been a boarder? (tick <u>one</u> box only)

☐ **Started this year** ☐ **1 year** ☐ **1 – 2 years** ☐ **3 – 5 years** ☐ **5+ years**

18. What is the name of your Boarding House or Residence or Division? _____

19. Approximately how many students are in your Boarding House? _____

20. Have you been a day student at this school before? (circle) Yes No

21. If you are a day student, have you ever been a boarder? (circle) Yes No

SECTION B: ACADEMIC ACHIEVEMENT, ENGAGEMENT, MOTIVATION

Numeracy and Literacy (NAPLAN)
In the past 18 months, students in Year 3 through to Year 11 will have received results on the National Assessment Program for Literacy and Numeracy – NAPLAN. Please circle (to the best you can remember) which BANDS you scored in Literacy and Numeracy in the previous NAPLAN test:

	Band (Low)									**Band (High)**
a. Literacy	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
b. Numeracy	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

c. How often do you do and complete your homework (circle one)

1 Never
2 Not very often
3 Some of the time
4 Often
5 Always

	Disagree Strongly						**Agree Strongly**
1. If I can't understand my scho	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2. I feel very pleased with myse	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3. When I study, I usually study	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4. I'm able to use some of the t	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5. Sometimes I don't try hard a	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6. When I don't do so well at sc	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7. I feel very pleased with myse	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Please note that part of this survey has been omitted due to copyright of original instruments.

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STUDENT SURVEY: ACADEMIC AND NON-ACADEMIC LIFE

	Disagree Strongly						Agree Strongly
8. Each week I'm trying less	1	2	3	4	5	6	7
9. If my homework is difficult,	1	2	3	4	5	6	7
10. When exams and assignm	1	2	3	4	5	6	7
11. Often the main reason I wo	1	2	3	4	5	6	7
12. When I get a good mark I'm	1	2	3	4	5	6	7
13. If I try hard, I believe I can	1	2	3	4	5	6	7
14. Learning at school is impor	1	2	3	4	5	6	7
15. I don't really care about sch	1	2	3	4	5	6	7
16. When I get a bad mark I'm	1	2	3	4	5	6	7
17. When I study, I usually orga	1	2	3	4	5	6	7
18. I'm often unsure how I can	1	2	3	4	5	6	7
19. I worry about failing exams	1	2	3	4	5	6	7
20. Often the main reason I wo … me	1	2	3	4	5	6	7
21. I get it clear in my head wh	1	2	3	4	5	6	7
22. I've pretty much given up b	1	2	3	4	5	6	7
23. If I don't give up, I believe I	1	2	3	4	5	6	7
24. I sometimes don't study ve	1	2	3	4	5	6	7
25. I feel very pleased with mys … something works	1	2	3	4	5	6	7
26. I feel very pleased with mys	1	2	3	4	5	6	7
27. Before I start an assignmer	1	2	3	4	5	6	7
28. When I'm taught something	1	2	3	4	5	6	7
29. I've pretty much given up b	1	2	3	4	5	6	7
30. I try to plan things out befo	1	2	3	4	5	6	7
31. Often the main reason I wo	1	2	3	4	5	6	7
32. When I study, I usually try t	1	2	3	4	5	6	7

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STUDENT SURVEY: ACADEMIC AND NON-ACADEMIC LIFE

	Disagree Strongly						Agree Strongly
33. If I have enough time, I beli	1	2	3	4	5	6	7
34. What I learn at school will b	1	2	3	4	5	6	7
35. I sometimes do things othe n't do so well	1	2	3	4	5	6	7
36. I'll keep working at difficult	1	2	3	4	5	6	7
37. When I do tests or exams I	1	2	3	4	5	6	7
38. Often the main reason I wo e	1	2	3	4	5	6	7
39. I usually stick to a study tim	1	2	3	4	5	6	7
40. If I work hard enough, I beli	1	2	3	4	5	6	7
41. It's important to understanc	1	2	3	4	5	6	7
42. I sometimes put assignmer n't do so well	1	2	3	4	5	6	7
43. In terms of my schoolwork,	1	2	3	4	5	6	7
44. When I study, I usually stuc	1	2	3	4	5	6	7
45. Overall, I get along well wit	1	2	3	4	5	6	7
46. When I do my schoolwork I	1	2	3	4	5	6	7
47. The teachers here take a p	1	2	3	4	5	6	7
48. I'm happy to stay on and co	1	2	3	4	5	6	7
49. I don't let study stress get c	1	2	3	4	5	6	7
50. I enjoy being a student at th	1	2	3	4	5	6	7
51. I participate when we discu	1	2	3	4	5	6	7
52. I look forward to continuing	1	2	3	4	5	6	7
53. Overall, I am liked by other	1	2	3	4	5	6	7
54. When I do my schoolwork I	1	2	3	4	5	6	7
55. Teachers in my classes ma with their work	1	2	3	4	5	6	7
56. I think I'm good at dealing v	1	2	3	4	5	6	7
57. In general, I get along well	1	2	3	4	5	6	7

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STUDENT SURVEY: ACADEMIC AND NON-ACADEMIC LIFE

	Disagree Strongly						Agree Strongly
58. I like my school	1	2	3	4	5	6	7
59. I get involved when we do g	1	2	3	4	5	6	7
60. I'd like to continue studying	1	2	3	4	5	6	7
61. Overall, other students are	1	2	3	4	5	6	7
62. When I do my schoolwork I	1	2	3	4	5	6	7
63. The teachers here are enth	1	2	3	4	5	6	7
64. I don't let a bad mark affect	1	2	3	4	5	6	7
65. In general, my teachers rea	1	2	3	4	5	6	7
66. Being a student at this scho	1	2	3	4	5	6	7
67. In general, my teachers are	1	2	3	4	5	6	7
68. I get involved in things we	1	2	3	4	5	6	7
69. I intend to complete schoo	1	2	3	4	5	6	7
70. Overall, I like other student	1	2	3	4	5	6	7
71. When I do my schoolwork I	1	2	3	4	5	6	7
72. Teachers here always seer	1	2	3	4	5	6	7
73. I'm good at dealing with set	1	2	3	4	5	6	7
74. When I'm at school I feel pr	1	2	3	4	5	6	7
75. I participate in class activiti	1	2	3	4	5	6	7
76. In general, my teachers giv	1	2	3	4	5	6	7
77. Teachers talk to you about	1	2	3	4	5	6	7
78. The teachers work hard to	1	2	3	4	5	6	7
79. Most teachers here conside	1	2	3	4	5	6	7
80. When I study, I try to memo	1	2	3	4	5	6	7
81. I like to work with other stu	1	2	3	4	5	6	7
82. When I study, I try to relate	1	2	3	4	5	6	7

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STUDENT SURVEY: ACADEMIC AND NON-ACADEMIC LIFE

	Disagree Strongly						Agree Strongly
83. I like to try to be better than	1	2	3	4	5	6	7
84. When I study, I memorize a	1	2	3	4	5	6	7
85. When I study, I figure out h	1	2	3	4	5	6	7
86. It is helpful to put together	1	2	3	4	5	6	7
87. I learn most when I work wi	1	2	3	4	5	6	7
88. Trying to be better than oth	1	2	3	4	5	6	7
89. When I study, I memorize a	1	2	3	4	5	6	7
90. When I study, I try to under	1	2	3	4	5	6	7
91. I do my best work when I w	1	2	3	4	5	6	7
92. I would like to be the best a	1	2	3	4	5	6	7
93. When I study, I practice by	1	2	3	4	5	6	7
94. I like to help other people d	1	2	3	4	5	6	7
95. When I study, I figure out h	1	2	3	4	5	6	7
96. I learn faster if I'm trying to	1	2	3	4	5	6	7

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SECTION C: NON-ACADEMIC LIFE

Please use the below list of common human traits to rate yourself as accurately as possible. Rate yourself as you really are compared to other people you know of the same age and sex, not as you wish to be. Please write the extent to which each trait describes you (1-7) to the left of each trait.

1	2	3	4	5	6	7
Very inaccurate	Moderately inaccurate	Slightly inaccurate	Neither inaccurate nor accurate	Slightly accurate	Moderately accurate	Very accurate

_____ 1. Shy
_____ 2. Talkative
_____ 3. Energetic
_____ 4. Quiet
_____ 5. Extraverted
_____ 6. Outgoing
_____ 7. Reserved
_____ 8. Untalkative
_____ 9. Creative
_____ 10. Intellectual

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STUDENT SURVEY: ACADEMIC AND NON-ACADEMIC LIFE

	Disagree Strongly						Agree Strongly
41. Overall, most things I	1	2	3	4	5	6	7
42. I get along well with m	1	2	3	4	5	6	7
43. My personal beliefs gi	1	2	3	4	5	6	7
44. In most ways my life is	1	2	3	4	5	6	7
45. I worry more than I ne	1	2	3	4	5	6	7
46. My personal beliefs gi	1	2	3	4	5	6	7
47. My parents treat me fa	1	2	3	4	5	6	7
48. The conditions of my l	1	2	3	4	5	6	7
49. I am a nervous persor	1	2	3	4	5	6	7
50. Most things I do, I do	1	2	3	4	5	6	7
51. I do not like my paren	1	2	3	4	5	6	7
52. I get upset easily	1	2	3	4	5	6	7
53. I am satisfied with my	1	2	3	4	5	6	7
54. I often feel confused a	1	2	3	4	5	6	7
55. Overall, I have a lot to	1	2	3	4	5	6	7
56. My parents understan	1	2	3	4	5	6	7
57. I feel my life is meanir	1	2	3	4	5	6	7
58. I worry about a lot of t	1	2	3	4	5	6	7
59. My personal beliefs he	1	2	3	4	5	6	7
60. So far I have gotten th	1	2	3	4	5	6	7
61. If I could live my life o	1	2	3	4	5	6	7
62. I feel that my life is ve	1	2	3	4	5	6	7

Please note that part of this survey has been omitted due to copyright of original instruments.

The reader is refered to the Methodology (pp. 116–126) for information on the original authors or publishers [e.g., Lifelong Achievement Group (www.lifelongachievement.com)] for the full set of items.

STUDENT SURVEY: ACADEMIC AND NON-ACADEMIC LIFE

63. Think about the kinds of things you usually do before or after school and on weekends. Over the past year, which of the following extra-curricular activities have you participated in?
You can tick ☑ <u>more than one</u> activity.

1 ☐ providing peer counselling / peer support	5 ☐ academic clubs or activities	9 ☐ team sport	13 ☐ outdoor activities e.g. Cadets, Duke of Edinburgh Award, etc
2 ☐ school projects e.g. social activities, fundraising, etc	6 ☐ providing academic tutoring	10 ☐ individual sport	14 ☐ community service, social justice or volunteering
3 ☐ student newspaper or magazine, etc	7 ☐ debating, public speaking, mock trials	11 ☐ overseas student exchange	15 ☐ student fellowship, ministry or church
4 ☐ student service, leadership, government or SRC	8 ☐ hobby clubs e.g. agriculture, robotics, woodwork, metalwork, etc	12 ☐ performing arts e.g. art, dance, drama, band, orchestra, choir	16 ☐ other: _____

THANKS – THAT IS THE END OF THE SURVEY

PLEASE CHECK YOU HAVE ANSWERED ALL QUESTIONS

APPENDIX J: MULTI-GROUP INVARIANCE FIT STATISTICS FOR MODELS

Table J.1

Time 1 Multi-group Invariance Fit Statistics for Models Across Day/Boarding Status, Gender, School Year-Level, Language Background, and Aboriginality

		χ^2	*df*	RMSEA	CFI
Student Type (Day/Boarding Status)					
Model 1	Free	13,940	1,669	.054	.92
Model 2	FL	15,016	1,716	.055	.91
Model 3	FL + UN	15,523	1,763	.055	.91
Model 4	FL + FC	15,397	1,926	.052	.91
Model 5	FL + FC + UN	16,001	1,973	.053	.90
Gender (Female/Male)					
Model 1	Free	13,246	1,669	.052	.92
Model 2	FL	15,335	1,716	.055	.91
Model 3	FL + UN	15,722	1,763	.055	.91
Model 4	FL + FC	15,759	1,926	.053	.91
Model 5	FL + FC + UN	16,163	1,973	.053	.90
School Year-Level (Junior/Senior High School)					
Model 1	Free	13,068	1,669	.051	.92
Model 2	FL	15,155	1,716	.055	.91
Model 3	FL + UN	15,493	1,763	.055	.91
Model 4	FL + FC	15,755	1,926	.053	.91
Model 5	FL + FC + UN	16,146	1,973	.053	.90
Aboriginality (Indigenous/non-Indigenous)					
Model 1	Free	11,692	1,669	.048	.93
Model 2	FL	15,312	1,716	.055	.91
Model 3	FL + UN	15,621	1,763	.055	.91
Model 4	FL + FC	15,835	1,926	.053	.91
Model 5	FL + FC + UN	16,124	1,973	.053	.90
Language Background (ESB/NESB)					
Model 1	Free	14,619	1,669	.055	.91
Model 2	FL	15,052	1,716	.055	.91
Model 3	FL + UN	15,242	1,763	.055	.91
Model 4	FL + FC	15,405	1,926	.052	.91
Model 5	FL + FC + UN	15,575	1,973	.052	.91

Notes: Free = unconstrained, FL = factor loadings constrained, FC = factor correlations constrained, UN = uniquenesses/residuals constrained.
ESB – English Speaking Background, NESB – Non-English Speaking Background

Table J.2
Time 2 Multi-group Invariance Fit Statistics for Models Across Student Type, Gender, School Year-Level, Language Background, and Aboriginality

		χ^2	*df*	RMSEA	CFI
Student Type (Day/Boarding Status)					
Model 1	Free	13,456	1,669	.052	.92
Model 2	FL	14,003	1,716	.053	.92
Model 3	FL + UN	14,331	1,763	.052	.92
Model 4	FL + FC	14,643	1,926	.050	.92
Model 5	FL + FC + UN	14,865	1,973	.050	.92
Gender (Female/Male)					
Model 1	Free	12,792	1,669	.050	.93
Model 2	FL	14,096	1,716	.053	.92
Model 3	FL + UN	14,331	1,763	.052	.92
Model 4	FL + FC	14,462	1,926	.050	.92
Model 5	FL + FC + UN	14,675	1,973	.050	.92
School Year-Level (Junior/Senior High School)					
Model 1	Free	12,646	1,669	.050	.93
Model 2	FL	14,082	1,716	.052	.92
Model 3	FL + UN	14,339	1,763	.052	.92
Model 4	FL + FC	14,588	1,926	.050	.92
Model 5	FL + FC + UN	14,893	1,973	.050	.91
Aboriginality (Indigenous/non-Indigenous)					
Model 1	Free	11,942	1,669	.048	.93
Model 2	FL	14,267	1,716	.053	.92
Model 3	FL + UN	14,616	1,763	.053	.92
Model 4	FL + FC	14,705	1,926	.050	.92
Model 5	FL + FC + UN	15,110	1,973	.050	.91
Language Background (ESB/NESB)					
Model 1	Free	13,844	1,669	.053	.92
Model 2	FL	14,087	1,716	.053	.92
Model 3	FL + UN	14,179	1,763	.052	.92
Model 4	FL + FC	14,427	1,926	.050	.92
Model 5	FL + FC + UN	14,522	1,973	.049	.92

Notes: Free = unconstrained, FL = factor loadings constrained, FC = factor correlations constrained, UN = uniquenesses/residuals constrained.
ESB – English Speaking Background, NESB – Non-English Speaking Background

Table J.3
Longitudinal Multi-group Invariance Fit Statistics for Time 1 and Time 2 Models Across Matched and Unmatched Samples

		χ^2	*df*	RMSEA	CFI
T1 Matched/Unmatched					
Model 1	Free	13,156	1,669	.051	.92
Model 2	FL	14,223	1,716	.053	.92
Model 3	FL + UN	14,536	1,763	.053	.92
Model 4	FL + FC	14,594	1,926	.050	.91
Model 5	FL + FC + UN	14,943	1,973	.050	.91
T2 Matched/Unmatched					
Model 1	Free	12,865	1,669	.050	.93
Model 2	FL	14,567	1,716	.053	.92
Model 3	FL + UN	14,737	1,763	.052	.92
Model 4	FL + FC	14,919	1,926	.050	.92
Model 5	FL + FC + UN	15,076	1,973	.049	.92
Time 1 – Time 2 Matched					
Model 1	Free	8,206	1,669	.044	.93
Model 2	FL	8,983	1,716	.046	.92
Model 3	FL + UN	9,099	1,763	.046	.92
Model 4	FL + FC	9,226	1,926	.044	.92
Model 5	FL + FC + UN	9371	1,973	.043	.92

Notes: Free = unconstrained, FL = factor loadings constrained, FC = factor correlations constrained, UN = uniquenesses/residuals constrained.

APPENDIX K: TIME 2 CROSS-SECTIONAL RESULTS

K.1 Introduction

The current appendix is a fuller outline of Time 2 Results (Chapter 6) which seeks to assess the stability of the empirical structural model by subsequent testing with Time 2 data (one year later) with the same cohorts of students from each school. The sample includes new students to each school at Time 2, particularly as students join these schools in Year 7 and 11, as well as the loss of Year 12 students from Time 1 cohorts. It is essentially a replication of the cross-sectional analysis performed for Time 1 Results (Chapter 5). The validity of the hypothesised model is assessed again via the two aspects of data analysis established in this earlier chapter: the psychometrics of instrumentation and the structural components of the hypothesised model. Findings in this appendix are based on Time 2 data (N = 5,276 students, Years 7 to 12 from 12 high schools across Australia[5]) with a particular emphasis on comparison against Time 1 data.

K.2 Time 2 Reliability Analysis and Basic Descriptive Statistics

Similar to Time 1, the first set of analyses assessed the reliability and distributional properties of scales. Reliability coefficients (Cronbach's alpha) were calculated to test the internal consistency of items for each of the academic and non-academic scales used in the Time 2 instrument (see Table K.1). Table K.1 demonstrates that all factors in the study again displayed acceptable to excellent levels of reliability as measured by Cronbach's alpha (M = .82), ranging from .68 for parent education to .93 for adaptive motivation. Again, there was evidence of absenteeism being leptokurtic and positively skewed but this was to be expected as

[5] One Time 1 school was dropped as very few consent forms were returned by parents at Time 2.

most students generally have few days absent. Evidence from skewness, kurtosis, and standard deviations generally suggested that scales were normally distributed (see Table K.1). Overall, then, analysis of Time 2 distributional properties and reliability coefficients indicated normally distributed data and reliable scales.

K.3 Time 2 Confirmatory Factor Analysis of the Instrumentation

As with Time 1, the second stage of psychometric analyses tested whether multivariate measurement of the model was replicated with a sound factor structure for academic and non-academic constructs at Time 2. As described in Chapter 4, confirmatory factor analysis (CFA) and maximum likelihood estimation was used to examine the underlying factor structure. Goodness-of-fit indices were then used to assess how closely the hypothesised model represented the data.

Again, the model provided a good fit to the data (χ^2 = 11,610, *df* = 1,279, RMSEA = .039, CFI = .91) and CFA factor loadings are outlined in Table K.1. The findings from this model replicate the sound factor loadings found at Time 1 and indicate that the factors were again well defined and robust. As with Time 1, items loaded highly on the factors they were intended to measure (average absolute factor loading = .84) and again support the empirical structural model. Consistent with Time 1, Time 2 analyses accounted for nesting of students within schools (and therefore the hierarchical nature of the data) by using the “complex” command in M*plus* to avoid erroneously conflating units/levels of analysis, dependencies within groups and biased standard errors in results (see Goldstein, 2003; Hox, 2010; Raudenbush & Bryk, 2002). Analysing the data in this way does not bias tests of statistical significance and provides adjusted standard errors (L. K. Muthén & B. O. Muthén, 1998–2012).

Table K.1
Time 2 Descriptive Statistics, Cronbach's Alpha, and Factor Loadings for the Substantive Scales in the Study

	Time 2					
Scale	**Mean**	***SD***	**Skewness**	**Kurtosis**	**Cronbach's Alpha**	**CFA Loadings Range (Mean)**
			Motivation			
Adaptive Motivation	5.17	0.91	-0.39	0.04	.93	.65 – .79 (.74)
Impeding Motivation	3.56	1.08	0.08	-0.39	.85	.60 – .69 (.65)
Maladaptive Motivation	2.47	1.14	0.66	-0.24	.86	.69 – .82 (.76)
			Academic Buoyancy			
Buoyancy	4.58	1.26	-0.35	-0.06	.79	.80 – .89 (.85)
			Student Approaches to Learning			
Competitive Learning	4.92	1.29	-0.44	-0.20	.80	.83 – .86 (.85)
Cooperative Learning	5.07	1.14	-0.52	0.17	.81	.79 – .92 (.85)
Personal Best Goalss	5.22	1.18	-0.42	-0.16	.88	.88 – .90 (.89)
			Academic Engagement			
Enjoyment of School	5.35	1.43	-0.86	0.14	.90	.90 – .91 (.90)
Educational Aspirations	5.77	1.19	-1.10	0.76	.82	.78 – .87 (.83)
Class Participation	5.24	1.25	-0.56	-0.06	.89	.89 – .91 (.90)
Absenteeism*	3.69	6.02	4.51	29.61	–	1.00
Homework Completion*	4.20	0.78	-1.01	1.44	–	1.00
			Academic Ability			
Prior Achievement#	0.00	0.93	-0.41	0.23	.83	.84 – .85(.84)
			Non-academic Outcomes			
Meaning and Purpose	4.90	1.32	-0.46	-0.13	.82	.78 – .92 (.85)
Life Satisfaction	4.97	1.18	-0.49	0.03	.79	.74 – .85 (.80)
Emotional Instability	3.82	1.37	0.01	-0.53	.82	.83 – .89 (.86)
Extracurricular Activities*	3.81	2.87	1.12	2.00	–	1.00
Peer Relationships	5.44	1.14	-0.87	0.57	.84	.82 – .86 (.84)
Parent Relationships	5.66	1.29	-1.00	0.47	.84	.85 – .89 (.87)
Teacher Relationships	5.10	1.24	-0.64	0.11	.87	.83 – .90 (.87)
			Personality			
Agreeableness	5.42	0.98	-0.71	0.40	.82	.81 – .84 (.82)
Conscientiousness	4.71	1.10	-0.13	-0.18	.82	.80 – .90 (.85)
Extraversion	4.90	1.06	-0.29	-0.17	.80	.79 – .87 (.83)
Neuroticism	3.70	0.98	-0.02	0.12	.72	.74 – .77 (.76)
Openness	4.95	0.94	-0.28	0.05	.73	.65 – .91 (.78)

* single item scales and thus reliability and factor loading ranges not available (factor loading is fixed to 1)
# standardised by year-level

Thus, the preliminary descriptive and psychometric analyses replicated at Time 2 further support the soundness of the instrument. As with Time 1, standard deviations are proportional to scale means, scales are approximately normally distributed, scales are reliable as indicated by Cronbach's alpha, and multidimensional measurement by way of CFA indicates good model fit and acceptable loadings at Time 2.

K.3.1 Measurement invariance across key sub-groups.

Again at Time 2 it was important to explore whether the factor structure across groups in the sample was invariant and hence whether it is justifiable to pool data across these groups for whole-sample analysis. This was tested via multi-group invariance testing (described in Chapter 4) using a series of hierarchical CFA as a function of student type (day/boarding status), gender, school year-level (junior high or senior high school), Aboriginality, and language background. The same five models from Time 1 were used with the Time 2 data, beginning with a baseline model which was least restrictive and in which no equality constraints are imposed, with subsequent tests for equivalence involving more stringent constraints for particular parameters.

Goodness-of-fit indices were used to determine whether factor structures were invariant across groups with particular consideration given to whether changes in the CFI (as described by Cheung & Rensvold, 2002) and RMSEA (see Chen, 2007) meet the criteria of $\Delta CFI < .01$ and $\Delta RMSEA < .015$. It was previously outlined (see Chapter 4) that in order to pool data that the factor structure across these sub-groups needed to be invariant and this has already been established for Time 1 data. Findings for each of these invariance analyses are reported in Table J.2. The minimum criterion for invariance is factor loadings which are invariant across

groups and the other criteria of uniquenesses and correlations being invariant are desirable (see Marsh, 1993). Therefore, these results show that the data are predominantly invariant across groups with minor departures on some residuals. This provides support for the pooling of data across groups for the Time 2 data and analysing the hypothesised model at the whole-sample level. Each invariance test is described in turn.

K.3.1.1 Student type.

As in Time 1, the first set of multi-group CFAs examined the factor structure as a function of student type, establishing a baseline model that allowed all factor loadings, uniquenesses, and correlations/variances to be freely estimated. This model yielded an acceptable fit to the data (χ^2 = 13,456, *df* = 1,669, RMSEA = .052, CFI = .92) (see Table J.2). While these fit indices suggest that this model is a good fit to the data, more stringent models were tested. Based on criteria for evidence of lack of invariance (see Chen, 2007; Cheung & Rensvold, 2002) the results indicate that, when subsequent parameters of the factor structure are held invariant across student type, there is relative invariance across all models. This suggests that at Time 2 the factor structure, factor loadings, uniquenesses, and factor correlations/variances are relatively invariant for day students and boarders.

K.3.1.2 Gender.

Similarly, multi-group CFAs were again used to examine the factor structure as a function of gender. The baseline model yielded a good fit to the data (χ^2 = 12,792, *df* = 1,669, RMSEA = .050, CFI = .93) and based on comparison of fit indices of the four additional models (see Table J.2) there is relative invariance across all models (see Chen, 2007; Cheung & Rensvold, 2002) when subsequent parameters of the factor structure are held invariant across gender. As was the case at

Time 1, this suggests that the factor structure, factor loadings, uniquenesses, and factor correlations/variances are relatively invariant across gender at Time 2.

K.3.1.3 School year-level.

In terms of school year-level (i.e., junior high or senior high school), the baseline model yielded a good fit to the data (χ^2 = 12,646, *df* = 1,669, RMSEA = .050, CFI = .93). Fit indices were again compared to four additional models (see Table J.2). Time 2 results indicate a slight variance between Model 1 and 5, but relative invariance across Models 1 to 4 when successive elements of the factor structure are held invariant across school year-level. The minimum criteria for invariance is factor loadings (see Marsh, 1993) so based on the fit indices being within the limits proposed by Chen (2007) and Cheung and Rensvold (2002), the factor structure and key measurement parameters (uniquenesses, factor correlations/variances) were deemed generally invariant for school year-level at Time 2.

K.3.1.4 Aboriginality (Indigenous status).

As with Time 1, Indigenous students comprised a relatively small sample; however, it was deemed important to again ascertain whether the factor structure was invariant for Aboriginality at Time 2. The baseline model yielded good fit to the data (χ^2 = 11,942, *df* = 1,669, RMSEA = .048, CFI = .93) and fit indices were again compared to four additional models (see Table J.2). Time 2 results indicate a slight variance between Model 1 and 5, but relative invariance across Models 1 to 4 when successive elements of the factor structure are held invariant across Aboriginality. Based on these relatively invariant fit indices, the factor structure and key measurement parameters (uniquenesses, factor correlations/variances) were deemed generally invariant for Aboriginality.

K.3.1.5 Language background.

Finally, in order to test for invariance as a function of language background (i.e., English speaking background vs. non-English speaking background), multi-group CFAs were employed. The baseline model yielded acceptable fit to the data (χ^2 = 13,844, *df* = 1,669, RMSEA = .053, CFI = .92). As for the other groups, fit indices were again compared to four additional models (see Table J.2) and indicate that the fit indices are comparable with relative invariance across all models (see Chen, 2007; Cheung & Rensvold, 2002). Thus, factor loadings, uniquenesses, and factor correlations/variances are relatively invariant for students of English and non-English speaking backgrounds.

Taken together, when analysing data as a function of student type, gender, school year-level, Aboriginality and language background, results show predominant invariance. As reflected in the ΔCFI > .01 between Models 1 and 5, some variance in factor loadings is evident for school year-level and Aboriginality (although ΔRMSEA is acceptable). As Aboriginality is not the primary substantive issue examined in this study, with Indigenous students comprising only 5% of the total sample (see Chapter 4), the relatively small sample size might account for the slight variance observed. Other stringent tests of invariance (Models 2 to 5) suggest invariance of uniquenesses and factor correlations across school year-level and Aboriginality, a larger sample of these students is needed in future research to better test invariance. These findings provide support for aggregating data and analysing the hypothesised model at the whole-sample level rather than separately as a function of gender, school year-level, or language background. Now that the relative invariance across these groups has been established, the relationships in the hypothesised Time 2 model are now the focus of analyses.

K.3.2 Correlations amongst factors.

Correlation analysis was again used to provide an early insight into relationships between student type (day/boarding status) and students' academic and non-academic outcomes. Latent correlations amongst factors are based on the whole-sample CFA described above and are presented in Table K.2. As established in Chapter 5, the present study is centrally concerned with the relationship between student type and academic and non-academic outcomes, hence the reason these correlations are highlighted here. However, the full range of relationships amongst all factors examined at Time 2 is readily available in Table K.2.

The same method as Time 1 was employed in calculating correlations with the present analyses adjusting for clustering of students within schools by implementing the "complex" command in M*plus*. Also described in Chapter 4 is the use of item parcels to create latent factors that are the basis of the correlation matrix. As previously discussed, this is a common approach to create item parcels to reduce the ratio of estimated parameters to sample size when researchers are estimating complex models.

Examination of the latent factor correlation matrix for Time 2 data suggested that all factors were reasonably distinct (see Table K.2). Also, correlations tended to be in the direction and strength hypothesised in the proposed model. As seen in Table K.2, student type (1 = day; 2 = boarding) is significantly correlated with the following dependent variables: impeding motivation (r = .15) and emotional instability (r = .06) (at $p < .001$), maladaptive motivation (r = .10), cooperative learning (r = -.07), and absenteeism (r = -.04), as well as peer relationships (r = -.08), parent relationships (r = .07), and participation in extracurricular activities (r = .07)

(at $p < 0.05$). Table K.2 reports other notable correlations that exist between student type and covariates and amongst academic, non-academic, and personality factors.

As correlational analysis does not control for shared variance amongst factors and for the influence of hypothesised covariates, the true degree to which this is the case is best established through structural equation modelling. In this way, predictive parameters between student type and the outcome factors were modelled whilst controlling for shared variance with covariates and amongst the academic and non-academic outcome factors. These SEM analyses were completed for Time 2 data and are discussed in the remainder of this chapter.

Table K.2

Time 2 CFA Factor Correlations for Academic and Non-academic Outcomes

	Student Type (F1) (Day/Boarding)	**Gender (F2)** (FM/M)	**Age (F3)**	**Language Background (F4)** (ESB/NESB)	**Parent Education (F5)**	**Aboriginality (F6)** (Indig/non-Indig)	**Prior Achievement (F7)**	**Agreeableness (F8)**	**Conscientiousness (F9)**	**Extraversion (F10)**	**Neuroticism (F11)**	**Openness (F12)**	**Single-sex Female (F13)** (FM/Co-Ed)	**Single-sex Male (F14)** (M/Co-Ed)	**School Achievement (F15)**	**Adaptive Motivation (F16)**	**Impeding Motivation (F17)**	**Maladaptive Motivation (F18)**	**Academic Buoyancy (F19)**	**Enjoyment of School (F20)**	**Educational Aspirations (F21)**	**Class Participation (F22)**	**Competitive Learning (F23)**	**Cooperative Learning (F24)**	**Personal Best Goals (F25)**	**Homework Completion (F26)**	**Absenteeism (F27)**	**Meaning & Purpose (F28)**	**Life Satisfaction (F29)**	**Emotional Instability (F30)**	**Peer Relationships (F31)**	**Parent Relationships (F32)**	**Teacher Relationships (F33)**	**Extracurricular Activities (F34)**
F1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F2	06	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F3	**14**	04	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F4	04	01	02	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F5	*-19*	15	-03	07	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F6	-22	06	01	-07	**22**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F7	**-18**	10	01	07	**36**	22	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F8	*-10*	*-14*	-05	-03	**12**	**11**	**18**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F9	-01	-04	**-08**	-01	07	**07**	**22**	**49**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F10	*-06*	-03	**-09**	**-12**	*06*	05	**10**	**26**	**12**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F11	**06**	**-14**	**15**	**05**	**-09**	*-04*	**-12**	**-25**	**-19**	**-25**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F12	**-13**	-01	-03	01	**21**	**10**	**40**	**47**	**37**	**24**	**-12**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F13	-08	-45	-05	13	15	*07*	06	*16*	05	04	*05*	*07*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F14	09	**57**	02	08	25	*10*	*17*	06	**10**	03	-08	**11**	*-26*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F15	03	21	09	18	**39**	21	**28**	**19**	**12**	04	*-06*	**15**	33	59	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F16	-03	-03	-12	*07*	**21**	*05*	**34**	**42**	**55**	**12**	**-15**	**42**	10	12	**20**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F17	**15**	**-12**	12	03	**-20**	*-15*	**-32**	**-22**	**-27**	**-18**	**55**	**-28**	-02	-10	**-15**	**-22**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F18	*10*	01	**20**	02	**-23**	**-17**	**-30**	**-46**	**-51**	**-17**	**28**	**-36**	-09	-14	**-22**	**-75**	**62**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F19	-02	**16**	**-12**	01	**10**	04	**23**	**20**	**26**	**19**	**-53**	**26**	-04	**15**	**13**	**41**	**-60**	**-32**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F20	-03	05	-13	04	**17**	**07**	**26**	**39**	**38**	**18**	**-21**	**30**	04	**22**	**28**	**67**	**-29**	**-64**	**46**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F21	-09	-06	-01	06	**28**	**10**	**40**	**43**	**40**	**16**	**-16**	**41**	13	15	**-27**	**-80**	**28**	**71**	**40**	**79**	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F22	-05	01	**-12**	-02	**18**	**07**	**29**	**38**	**37**	**38**	**-19**	**37**	*07*	**11**	**17**	**66**	**-27**	**-54**	**47**	**70**	**70**	–	–	–	–	–	–	–	–	–	–	–	–	–
F23	-01	**18**	**10**	**10**	**17**	08	**35**	**17**	**22**	**09**	10	**28**	00	**25**	**24**	**46**	06	**-23**	**16**	**34**	**45**	**36**	–	–	–	–	–	–	–	–	–	–	–	–
F24	*-07*	-04	**-14**	01	08	04	**10**	**39**	**21**	**25**	**-15**	**19**	03	03	07	**49**	-06	**-33**	**35**	**49**	**43**	**56**	**27**	–		–	–	–	–	–	–	–	–	–
F25	-03	-02	**-16**	*06*	11	04	**26**	**40**	**49**	**13**	**-15**	**33**	05	**11**	13	**85**	**-17**	**-63**	**44**	**64**	**71**	**65**	**41**	**51**	–	–	–	–	–	–	–	–	–	–
F26	-07	-08	**-18**	02	**15**	**13**	**26**	**27**	**45**	04	**-10**	**23**	08	08	*13*	**48**	**-19**	**-52**	**16**	**34**	**37**	**31**	**15**	**18**	**44**	–	–	–	–	–	–	–	–	–	–
F27	*-04*	-05	02	-04	**-08**	*-09*	-08	**-06**	**-09**	02	04	-03	-03	**-10**	**-15**	**-13**	**07**	**17**	**-06**	**-12**	**-11**	**-08**	-06	**-04**	**-10**	**-14**	–	–	–	–	–	–	–	–	–
F28	03	02	-07	*05*	**10**	02	**19**	**36**	**39**	**16**	**-13**	**29**	07	**13**	**16**	**57**	**-15**	**-39**	**36**	**50**	**47**	**48**	**29**	**41**	**53**	**25**	-06	–	–	–	–	–	–	–	–
F29	-01	02	**-10**	-02	**15**	**05**	**25**	**38**	**39**	**23**	**-31**	**29**	06	**12**	**15**	**59**	**-31**	**-51**	**50**	**65**	**58**	**56**	**29**	**44**	**56**	**31**	**-08**	**72**	–	–	–	–	–	–	–
F30	**06**	**-17**	**10**	**06**	**-08**	**-05**	**-10**	**-16**	**-13**	**-29**	**74**	**-13**	**06**	**-10**	*-06*	-05	**69**	**27**	**-51**	**-17**	**-11**	**-17**	08	**-09**	*-06*	**-07**	02	*-06*	**-27**	–	–	–	–	–	–
F31	*-08*	-06	-05	-01	**17**	**08**	**27**	**46**	**34**	**33**	**-25**	**33**	11	07	14	**62**	**-26**	**-52**	**43**	**72**	**67**	**68**	**32**	**60**	**59**	**29**	**-06**	**44**	**60**	**-21**	–	–	–	–	–
F32	*07*	02	10	01	**12**	05	**17**	**40**	**38**	**11**	**-22**	**24**	*08*	**12**	**16**	**55**	**-28**	**-55**	**34**	**54**	**54**	**46**	**22**	**34**	**49**	**31**	**-09**	**55**	**76**	**-20**	**48**	–	–	–	–
F33	-01	04	-03	*05*	**15**	04	**27**	**41**	**40**	**11**	**-18**	**34**	07	**17**	**25**	**69**	**-28**	**-54**	**52**	**79**	**71**	**70**	**36**	**44**	**65**	**34**	**-10**	**51**	**61**	**-12**	**62**	**53**	–	–	–
F34	*07*	01	**14**	-03	**14**	04	**25**	**12**	**15**	**13**	01	**19**	04	13	**16**	**16**	-03	-10	**07**	**12**	**15**	**17**	**19**	*07*	**13**	**12**	-01	**16**	**14**	-01	12	**08**	**13**	–	–

Note: decimal point omitted. *r* values significant at $p < .001$ are indicated in **bold**, $p < .01$ underlined, and $p < .05$ in *italics*.

K.4 Assessment of the Hypothesised Time 2 Structural Model

Structural equation modelling was employed at Time 2 and sought to assess stability with Time 2 data. Five steps were conducted in structural equation modelling; firstly with student type (day/boarding status) included as the sole predictor of outcomes (Step 1) and then adding socio-demographic covariates (Step 2), prior achievement (Step 3), personality (Step 4), and school-level factors (Step 5). Examining the role of student type first allows investigation of how its effects are systematically moderated as subsequent predictors are entered into the model. This provides useful guidance as to factors that operate alongside student type to affect its relationship with academic and non-academic outcomes. Steps 2 to 5 allowed for the predictive parameters between student type and outcome factors to be modelled whilst controlling for shared variance amongst socio-demographic, prior achievement, personality, and school-level covariates and the academic and non-academic factors.

SEM was conducted in M*plus* 7 to test the proposed model with the ordering of this model such that student type predicted academic and non-academic outcomes, controlling for the effects of socio-demographics, prior achievement, personality, and school-level variables. The full hypothesised model is presented in Figure 4.1 in Chapter 4. Again, as in earlier analyses, this SEM was based on item parcels and the hierarchical clustering of students within schools is accounted for by using the "complex" command in M*plus*.

K.4.1 Step 1: Student type (day/boarding status).

Step 1 of the hierarchical model included only *student type* (day/boarding status) as the predictor of academic and non-academic outcomes. To disentangle the role of student type from effects due to socio-demographic, prior achievement,

personality, and school-level factors, this step is juxtaposed with Steps 2 to 5 (described below) that include these covariates. This SEM yielded an acceptable fit to the data (χ^2 = 7,387, *df* = 593, RMSEA = .047, CFI = .95). Based only on student type, there were no significant differences found between day and boarding students on 11 of 19 academic and non-academic outcomes. In terms of academic measures, boarders scored higher than day students on impeding motivation (β = .14, $p < .001$), maladaptive motivation (β = .10, $p < .05$), lower on cooperative learning (β = -.07, $p < .05$), and absenteeism (β = -.04, $p < .05$). On the non-academic measures, boarders scored higher than day students on emotional instability (β = .06, $p < .001$), participation in extracurricular activities (β = .06, $p < .05$), and parent relationships (β = .07, $p < .05$) and scored lower on peer relationships (β = -.08, $p < .05$). On two of the three student approaches to learning measures, four of five academic engagement measures, and on three of the seven non-academic measures, day students and boarders were not significantly different. Tables K.3 and K.4 outline all standardised beta coefficients for outcomes measured in Steps 2 to 4 of the hierarchical model while Tables K.5 and K.6 and Figure K.1 outline standardised beta coefficients for the full empirical structural model, which includes Step 5.

Table K.3

Time 2 Standardised Beta Coefficients (β) for Academic Outcomes in Each Step of the Hierarchical Model

	Adaptive Motivation	**Impeding Motivation**	**Maladaptive Motivation**	**Academic Buoyancy**	**Competitive Learning**	**Cooperative Learning**	**Personal Bests**	**Homework Completion**	**Absenteeism**	**Enjoyment of School**	**Educational Aspirations**	**Class Participation**
	β ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***
STEP 1 **Student Type** (1=Day/2=Boarding)	-.03 (.01)	.14*** (.02*)	.10* (.01)	-.02 (.01)	-.01 (.01)	-.07* (.01)	-.03 (.01)	-.07 (.01)	-.04* (.01)	-.03 (.01)	-.09 (.01)	-.05 (.01)
STEP 2 **Student Type** (1=Day/2=Boarding) **(+ socio-demographics)**	.04 (.06**)	.09** (.08***)	-.01 (.11***)	.01 (.05***)	.01 (.07***)	-.03 (.03*)	.02 (.04**)	.01 (.07***)	-.08*** (.02*)	.02 (.05*)	-.02 (.09**)	.01 (.04***)
STEP 3 **Student Type** (1=Day/2=Boarding) **(+ socio-demographic, prior achievement)**	.07* (.15***)	.06* (.14***)	-.03 (.16***)	.03 (.09***)	.04 (.16***)	-.02 (.03**)	.05* (.10**)	.04 (.12***)	-.08*** (.02*)	.05 (.09***)	.01 (.19***)	.03 (.11***)
STEP 4 **Student Type** (1=Day/2=Boarding) **(+ socio-demographic, prior achievement, personality)**	.06** (.41***)	.05* (.40***)	-.02 (.41***)	.04* (.35***)	.04 (.25***)	-.02 (.19***)	.04** (.32***)	.02 (.27***)	-.08** (.03***)	.05 (.26***)	.01 (.36***)	.03 (.33***)
STEP 5 **Student Type** (1=Day/2=Boarding) **(+ socio-demographic, prior achievement, personality, school factors)**	.05** (.41***)	.06* (.40***)	-.01 (.41***)	.03* (.35***)	.02 (.26***)	-.02 (.19***)	.03** (.32***)	.01 (.27***)	-.07** (.04***)	.02 (.29***)	-.01 (.37***)	.03 (.33***)

* $p < .05$, ** $p < .01$, ***$p < .001$

Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006)

FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational

Table K.4

Time 2 Standardised Beta Coefficients (β) for Non-academic Outcomes in Each Step of the Hierarchical Model

	Meaning & Purpose	**Life Satisfaction**	**Emotional Instability**	**Extracurricular Activities**	**Peer Relationships**	**Parent Relationships**	**Teacher Relationships**
	β ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***
STEP 1 **Student Type** (1=Day/2=Boarding)	.03 (.01)	-.01 (.01)	.06*** (.01*)	.06* (.01)	-.08* (.01)	.07* (.01)	-.01 (.01)
STEP 2 **Student Type** (1=Day/2=Boarding) **(+ socio-demographics)**	.06 (.02**)	.04 (.03**)	.04** (.05***)	.09*** (.05***)	-.03 (.04**)	.12*** (.04***)	.02 (.03*)
STEP 3 **Student Type** (1=Day/2=Boarding) **(+ socio-demographic, prior achievement)**	.08** (.05***)	.06** (.08***)	.04** (.06***)	.11*** (.10***)	-.01 (.09***)	.14*** (.06***)	.05 (.08***)
STEP 4 **Student Type** (1=Day/2=Boarding) **(+ socio-demographic, prior achievement, personality)**	.08** (.22***)	.06** (.28***)	.02 (.57***)	.11*** (.13***)	.01 (.31***)	.13*** (.24***)	.04 (.26***)
STEP 5 **Student Type** (1=Day/2=Boarding) **(+ socio-demographic, prior achievement, personality, school factors)**	.07* (.22***)	.06** (.28***)	.02 (.57***)	.10*** (.14***)	-.01 (.32***)	.13*** (.25***)	.03 (.28***)

* $p < .05$, ** $p < .01$, ***$p < .001$

Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006)

FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational

K.4.2 Step 2: Student type after controlling for socio-demographic factors.

Step 2 in the hierarchical analyses controlled for *socio-demographic* factors, enabling the role of student type to be examined once moderated after the inclusion of socio-demographic factors. This SEM yielded an acceptable fit to the data (χ^2 = 8,125, *df* = 740, RMSEA = .043, CFI = .94). After accounting for socio-demographic factors, there were no significant differences found between day and boarding students on 14 of 19 academic and non-academic outcomes. In terms of academic measures, boarders scored higher than day students on impeding motivation (β = .09, $p < .01$) but lower on absenteeism (β = -.08, $p < .001$). On the non-academic measures, boarders scored higher than day students on emotional instability (β = .04, $p < .01$), participation in extracurricular activities (β = .09, $p < .001$), and parent relationships (β = .12, $p < .001$). On all three student approaches to learning measures, four out of five academic engagement measures, and on four of the seven non-academic measures, day students and boarders were not significantly different after controlling for socio-demographic factors. Further below, the precise nature of these moderators is examined in supplementary analyses.

K.4.3 Step 3: Student type after controlling for socio-demographic and prior achievement factors.

Step 3 in the hierarchical analyses controlled for socio-demographic and *prior achievement* factors, enabling the role of student type to be tested once moderated by the inclusion of additional covariates. This SEM yielded an acceptable fit to the data (χ^2 = 8,649, *df* = 810, RMSEA = .043, CFI = .94). After accounting for the socio-demographic and prior achievement factors, there were no significant differences found between day and boarding students on 10 of 19 academic and non-

academic outcomes. In terms of academic measures, boarders scored higher than day students on adaptive motivation (β = .07, $p < .05$), impeding motivation (β = .06, $p < .05$), PBs (β = .05, $p < .05$), and lower on absenteeism (β = -.08, $p < .001$). On the non-academic measures, boarders scored higher than day students on meaning and purpose (β = .08, $p < .01$), life satisfaction (β = .06, $p < .01$), emotional instability (β = .04, $p < .01$), participation in extracurricular activities (β = .11, $p < .001$), and parent relationships (β = .14, $p < .001$). On two of the three student approaches to learning measures, four out of five academic engagement measures, and on two of the seven non-academic measures, day students and boarders were not significantly different once prior achievement was included in the model. Thus, after controlling for socio-demographic and prior achievement factors, the role of boarding becomes somewhat more positive. Further below, the precise nature of these moderators is examined in supplementary analyses.

K.4.4 Step 4: Student type after controlling for socio-demographic, prior achievement, and personality factors.

Step 4 in the hierarchical analyses controlled for socio-demographic, prior achievement, and *personality* factors, enabling the role of student type to be assessed once moderated by the addition of these three covariate sets. The SEM for this analysis yielded an acceptable fit to the data (χ^2 = 10,943, *df* = 1,195, RMSEA = .039, CFI = .94). After accounting for the covariates outlined, there were no significant differences found between day and boarding students on 10 of 19 academic and non-academic outcomes. In terms of academic measures, boarders scored higher than day students on adaptive motivation (β = .06, $p < .01$) and impeding motivation (β = .05, $p < .05$) as well as scoring higher on academic buoyancy (β = .04, $p < .05$). In terms of student approaches to learning, boarders

scored higher than day students on PBs (β = .04, $p < .01$) but lower on an academic engagement measure (absenteeism; β = -.08, $p < .01$). On the non-academic measures, boarders scored higher than day students on meaning and purpose (β = .08, $p < .01$), life satisfaction (β = .06, $p < .01$), participation in extracurricular activities (β = .11, $p < .001$), and parent relationships (β = .13, $p < .001$). On two of the three student approaches to learning measures, four out of five academic engagement measures, and on three of the seven non-academic measures, day and boarding students were not significantly different after controlling for socio-demographic, prior achievement, and personality factors. Thus, inclusion of personality seems to further suggest positive yields of student type (i.e., boarding status). The precise nature of these moderators is examined in supplementary analyses further below.

K.4.5 Step 5: Student type after controlling for socio-demographic, prior achievement, personality, and school-level factors.

Step 5 in the hierarchical analyses represents the full, empirical structural model and controlled for socio-demographic, prior achievement, personality and *school-level* factors. This SEM yielded an acceptable fit to the data (χ^2 = 11,610, *df* = 1,279, RMSEA = .039, CFI = .91). After accounting for the covariates, there were no significant differences found between day and boarding students on 10 of 19 academic and non-academic outcomes. In terms of academic measures, boarders scored higher than day students on adaptive motivation (β = .05, $p < .01$) and impeding motivation (β = .06, $p < .05$) as well as scoring higher on academic buoyancy (β = .03, $p < .05$). In terms of student approaches to learning, boarders scored higher than day students on PBs (β = .03, $p < .01$) but lower on a measure of academic engagement (absenteeism; β = -.07, $p < .05$). On the non-academic measures, boarders again scored higher than day students on meaning and purpose (β

= .07, $p < .05$), life satisfaction (β = .06, $p < .01$), participation in extracurricular activities (β = .10, $p < .001$), and parent relationships (β = .13, $p < .001$). On two of the three student approaches to learning measures, four out of five academic engagement measures, and on three of the seven non-academic measures, day and boarding students were not significantly different once the moderating effects of socio-demographic, prior achievement, personality, and school-level factors were taken into consideration. After inclusion of socio-demographic, prior achievement, and personality factors, the presence of school-level factors did not seem to further moderate the influence of student type (i.e., boarding status). See Tables K.5 and K.6 and Figure K.1 for further information on all standardised β coefficients for outcomes measured.

Table K.5

Time 2 Standardised Beta Coefficients (β) for Academic Outcomes in the Empirical Structural Model

	Adaptive Motivation	Impeding Motivation	Maladaptive Motivation	Academic Buoyancy	Competitive Learning	Cooperative Learning	Personal Bests	Homework Completion	Absenteeism	Enjoyment of School	Educational Aspirations	Class Participation
FULL MODEL:	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**	**β**
Student Type (1=Day/2=Boarding)	.05**	.06*	-.01	.03*	.02	-.02	.03**	.01	-.07*	.02	-.01	.03
Gender (1=FM/2=M)	-.03	-.06*	.05**	.07***	.15***	.01	-.02	-.12***	-.01	-.03	-.11***	.02
Age	-.09***	.03	.16***	-.05*	.08***	-.11***	-.13***	-.15***	.04**	-.11**	.02	-.08**
Language Background (1=ESB/2=NESB)	.05*	.02	.02	.02*	.07**	.05**	.05**	.01	-.02	.02	.02	.01
Parent Education	.08***	-.04	-.09***	-.03	-.01	.03	.01	.06	-.03	.02	.12***	.05***
Aboriginality (1=Indig/2=non-Indig)	-.05	-.05	-.07*	-.02	-.01	-.02	-.04	.06*	-.07	-.03	-.04	-.03
Prior Achievement	.16***	-.15***	-.09***	.09**	.25***	.02	.13***	.15***	-.03	.11***	.21***	.13***
Personality												
Agreeableness	.13***	.07	-.19***	-.06*	.06	.34***	.17***	.03	-.02	.20***	.20***	.14***
Conscientiousness	.39***	-.12***	-.32***	.12***	.13***	.03	.35***	.38***	-.06***	.19***	.18***	.19***
Extraversion	-.01	-.01	.01	.04*	.08***	.16***	.01	-.05	.04*	.06*	.02	.28***
Neuroticism	.01	.49***	.12***	-.47***	.21***	-.01	.01	-.01	.02	-.06***	-.03	-.01
Openness	.14***	-.13***	-.05*	.14***	.10***	-.04	.06***	.01	.03*	.04*	.12***	.10***
School factors												
Single-sex Female (1=FM/2=Co-Ed)	.01	-.01	.04	-.02	.03	-.05	-.01	-.02	.02	-.07	-.02	-.02
Single-sex Male (1=M/2=Co-Ed)	.02	.07	-.01	-.01	.10*	-.03	.04	.05	-.01	.04	.05	-.02
School Achievement	.03	-.07	-.09*	-.06**	.02	.02	.01	.02	-.11*	.18***	.09*	.07*
FULL MODEL: ***(R^2)***	(.41***)	(.40***)	(.41***)	(.35***)	(.26***)	(.19***)	(.32***)	(.27***)	(.04***)	(.29***)	(.37***)	(.33***)

* $p < .05$, ** $p < .01$, ***$p < .001$

Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006)

FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational

Table K.6

Time 2 Standardised Beta Coefficients (β) for Non-academic Outcomes in the Empirical Structural Model

	Meaning & Purpose	Life Satisfaction	Emotional Instability	Extracurricular Activities	Peer Relationships	Parent Relationships	Teacher Relationships
FULL MODEL:	**β**	**β**	**β**	**β**	**β**	**β**	**β**
Student Type (1=Day/2=Boarding)	.07*	.06**	.02	.10***	-.01	.13***	.03
Gender (1=FM/2=M)	.05**	.01	-.06***	-.06**	-.05***	.03*	.01
Age	-.04	-.05**	-.01	.13***	.01	-.08***	-.01
Language Background (1=ESB/2=NESB)	.04*	-.02	.01	-.06**	.01	-.01	.02
Parent Education	.01	.05**	.01	.06*	.05**	.04*	.01
Aboriginality (1=Indig/2=non-Indig)	-.04**	-.03*	-.01	-.03	-.01	-.01	-.06
Prior Achievement	.07**	.12***	.02	.20***	.13***	.06*	.12***
Personality							
Agreeableness	.19***	.16***	.08*	.01	.27***	.27***	.22***
Conscientiousness	.24***	.22***	-.01	.08***	.12***	.20***	.21***
Extraversion	.07***	.09***	-.11***	.11***	.19***	-.02	-.03
Neuroticism	.01	-.17***	.72***	.06**	-.10***	-.09***	-.06*
Openness	.07**	.03	-.06*	.05*	.04	.01	.10***
School factors							
Single-sex Female (1=FM/2=Co-Ed)	.04	.03	.01	.01	.04*	.05**	-.01
Single-sex Male (1=M/2=Co-Ed)	.04	.04	.01	.08*	.04	.04	.02
School Achievement	.02	.01	-.02	.02	-.03	.01	.13**
FULL MODEL: (R^2)	(.22***)	(.28***)	(.57***)	(.14***)	(.32***)	(.25***)	(.28***)

* $p < .05$, ** $p < .01$, ***$p < .001$

Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006)

FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational

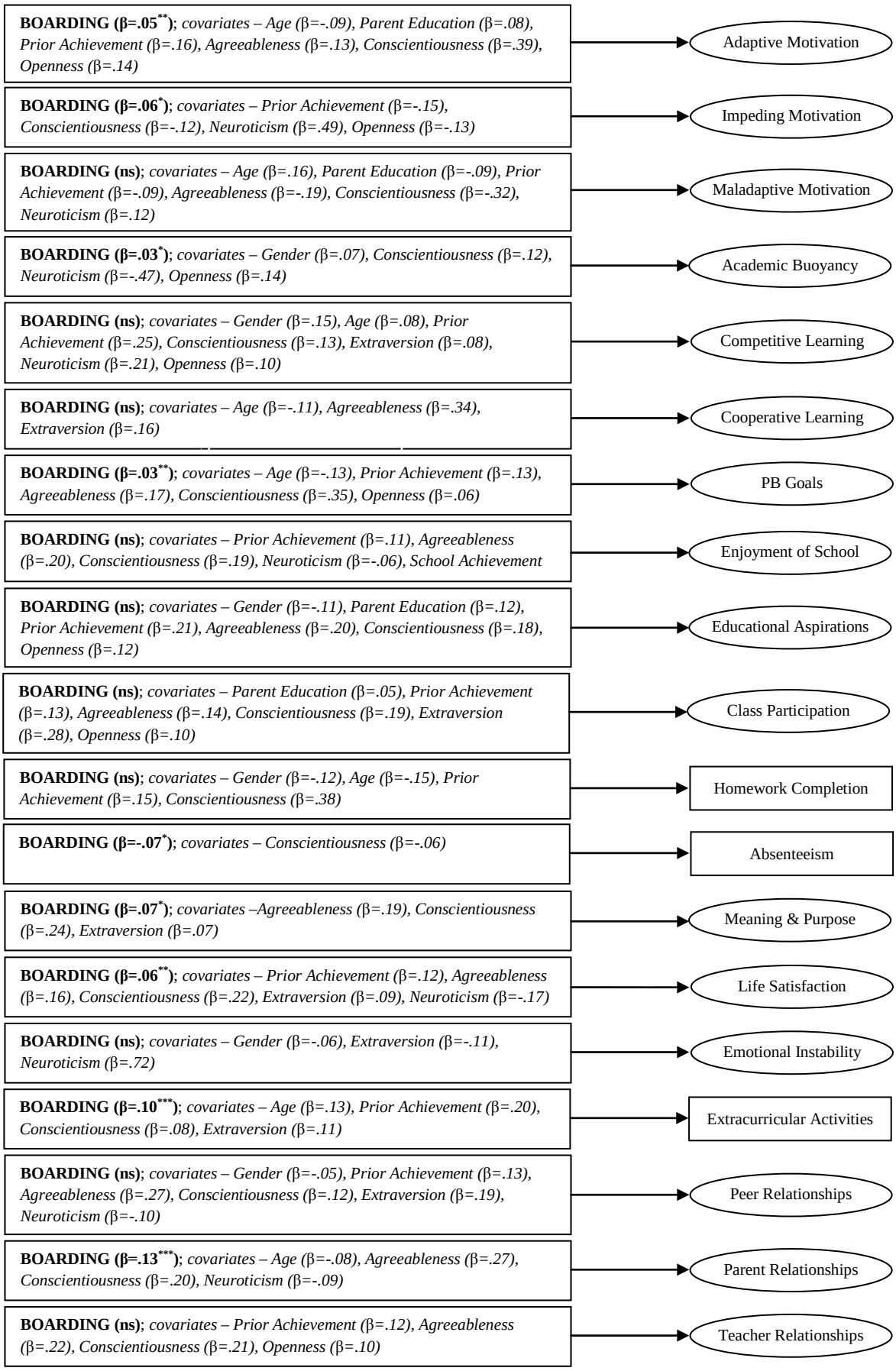

Figure K.1. Time 2 empirical structural model (standardised parameter estimates, β) for academic and non-academic outcomes. Fit: CFI = .91 and RMSEA = .039.
All paths reported for covariates are significant at $p < .001$.

K.4.6 Interactions.

The interactions between student type, socio-demographic, prior achievement, personality, and school-level factors (resulting in 266 interaction terms e.g., student type × gender, student type × age, student type × parent education, student type × language background, student type × Aboriginality, student type × school structure, student type × agreeableness, etc.) were again considered at Time 2.

Of the 266 interaction effects examined, five yielded significant results (at $p < .001$). For peer relationships, one interaction was significant; that being student type × agreeableness ($\beta = -.05$, $p < .001$; such that day students higher on agreeableness reported more positive relationships with their peers). For cooperation, one interaction was significant; that of student type × agreeableness ($\beta = -.06$, $p < .001$; such that day students higher on agreeableness reported greater cooperation). For teacher relationships, one interaction was significant; that of student type × openness ($\beta = -.05$, $p < .001$; such that day students higher on openness reported more positive relationships with their teachers). For parent relationships, two interaction effects were significant; that of student type × Aboriginality ($\beta = -.05$, $p < .001$; such that non-Indigenous boarders reported more positive parent relationships) and student type × conscientiousness ($\beta = -.04$, $p < .001$; such that boarders who scored higher on conscientiousness reported more positive parent relationships). As can be seen at Time 2, these interactions highlight the contribution of the main effects (student type, socio-demographic, prior achievement, and personality factors on academic and non-academic outcomes) in explaining a greater amount of variance than those significant interactions identified.

K.4.7 Follow-up analysis: Identifying influential covariate sets.

Further analysis was conducted to consider each covariate set to better identify which one(s) were uniquely moderating the role of student type (day/boarding status) more or less than others. For this reason, SEM was conducted separately controlling for student type and socio-demographics, student type and prior achievement, and student type and personality. Tables K.7 and K.8 provide further information on the contribution of these covariates on standardised β coefficients for outcomes measured.

The unique contribution of socio-demographic factors has previously been discussed in Step 2 of SEM (Tables K.3 and K.4). This considered the role of student type after controlling for socio-demographic factors. The results of this analysis reveal that on 14 out of 19 academic and non-academic outcomes there was no significant difference between day and boarding students. It also shows a change in impeding motivation (β = .09, $p < .01$), absenteeism (β = -.08, $p < .001$), emotional instability (β = .04, $p < .01$), participation in extracurricular activities (β = .09, $p < .001$), and parent relationships (β = .12, $p < .001$) due to the contribution of socio-demographic factors compared with the influence of student type alone (i.e., not controlled for socio-demographics).

In the next analysis, the role of student type was examined after the separate inclusion of prior achievement as a covariate. The SEM yielded an acceptable fit to the data ($\chi^2 = 7{,}870$, $df = 654$, RMSEA = .046, CFI = .95). The results of this analysis reveal that on 12 out of 19 academic and non-academic outcomes there was no significant difference between day and boarding students. As a result of including prior achievement along with student type, a significant change was evident in impeding motivation, (β = .09, $p < .01$), competitive learning (β = .06, $p < .05$),

absenteeism (β = -.06, $p < .01$), meaning and purpose (β = .07, $p < .05$), emotional instability (β = .05, $p < .001$), participation in extracurricular activities (β = .11, $p < .001$), and parent relationships (β = .10, $p < .001$) due to the contribution of prior achievement compared with the influence of student type alone.

Finally, to examine the unique contribution of personality, these factors were included along with student type. This SEM yielded an acceptable fit to the data (χ^2 = 9,447, *df* = 928, RMSEA = .042, CFI = .95). The results of this analysis reveal that on 13 out of 19 academic and non-academic outcomes there was no significant difference between day and boarding students. As a result of including personality along with student type, a significant change was evident in impeding motivation (β = .09, $p < .01$), academic buoyancy (β = .03, $p < .05$), absenteeism (β = -.05, $p < .05$), meaning and purpose (β = .07, $p < .05$), participation in extracurricular activities (β = .09, $p < .001$), and parent relationships (β = .11, $p < .001$) due to the contribution of personality compared with the influence of student type alone.

Taken together with results from Steps 1 to 5 of SEM above, these findings are important because they reveal significantly more than what the correlation analyses are able to reveal—that is, they allow variance due to the contribution of each socio-demographic, prior achievement, personality, and school-level factor sets to be determined. Because covariates are included in modelling, they also highlight the change in student type effects once these are taken into consideration. As at Time 1, it is the variance in outcomes as a result of these factors (over and above student type) which is important to discuss.

Considered in conjunction with follow-up analyses of student attributes (see below), which highlighted significant differences between day students and boarding for gender (a greater percentage of girls or boys as day students than as boarders),

age (boarders were on average older than day students), prior achievement (day students tended to be higher on achievement compared to boarders), parents'/guardians' education (day students tended to have parents/guardians of higher education), and personality (boarders tended to be lower on favourable traits and higher on unfavourable traits), much of the difference between day student and boarder outcomes can be accounted for due to these covariates. However, while the full SEM reveals some significant findings for boarding students, the overall pattern of results indicates that the outcomes of day students and boarders are quite similar after controlling for the numerous covariates outlined above.

Table K.7

Time 2 Standardised Beta Coefficients (β) for Academic Outcomes due to Moderation by Covariates

	Adaptive Motivation	**Impeding Motivation**	**Maladaptive Motivation**	**Academic Buoyancy**	**Competitive Learning**	**Cooperative Learning**	**Personal Bests**	**Homework Completion**	**Absenteeism**	**Enjoyment of School**	**Educational Aspirations**	**Class Participation**
	β ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***
Student Type (1=Day/2=Boarding)	-.03	.14***	.10*	-.02	-.01	-.07*	-.03	-.07	-.04*	-.03	-.09	-.05
	(.01)	(.02*)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
+ Socio-demographics	.04	.09**	-.01	.01	.01	-.03	.02	.01	-.08***	.02	-.02	.01
	(.06**)	(.08***)	(.11***)	(.05***)	(.07***)	(.03*)	(.04**)	(.07***)	(.02*)	(.05*)	(.09**)	(.04***)
+ Prior Achievement	.04	.09**	.04	.03	.06*	-.05	.02	-.02	-.06**	.02	-.02	-.01
	(.12***)	(.11***)	(.09***)	(.05***)	(.13***)	(.01*)	(.07***)	(.07***)	(.01)	(.07***)	(.16***)	(.08***)
+ Personality	.02	.09**	.05	.03*	.02	-.03	.01	-.05	-.05*	.01	-.03	.01
	(.37***)	(.37***)	(.35***)	(.33***)	(.12***)	(.17***)	(.29***)	(.22***)	(.01**)	(.22***)	(.27***)	(.30***)
FULL MODEL:												
Student Type	.05**	.06*	-.01	.03*	.02	-.02	.03**	.01	-.07*	.02	-.01	.03
+ All Factors												
(R^2)	(.41***)	(.40***)	(.41***)	(.35***)	(.26***)	(.19***)	(.32***)	(.27***)	(.04***)	(.29***)	(.37***)	(.33***)

* $p < .05$, ** $p < .01$, ***$p < .001$

Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006)

FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational

Table K.8

Time 2 Standardised Beta Coefficients (β) for Non-academic Outcomes due to Moderation by Covariates

	Meaning & Purpose	**Life Satisfaction**	**Emotional Instability**	**Extracurricular Activities**	**Peer Relationships**	**Parent Relationships**	**Teacher Relationships**
	β ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***	**β** ***(R^2)***
Student Type (1=Day/2=Boarding)	.03 (.01)	-.01 (.01)	.06*** (.01*)	.06* (.01)	-.08* (.01)	.07* (.01)	-.01 (.01)
+ Socio-demographics	.06 (.02**)	.04 (.03**)	.04** (.05***)	.09*** (.05***)	-.03 (.04**)	.12*** (.04***)	.02 (.03*)
+ Prior Achievement	.07* (.04***)	.04 (.06***)	.05*** (.01***)	.11*** (.08***)	-.04 (.07***)	.10*** (.04***)	.04 (.07***)
+ Personality	.07* (.20***)	.04 (.26***)	.01 (.57***)	.09*** (.06***)	-.03 (.29***)	.11*** (.23***)	.03 (.24***)
FULL MODEL:							
Student Type + All Factors	.07*	.06**	.02	.10***	-.01	.13***	.03
(R^2)	(.22***)	(.28***)	(.57***)	(.14***)	(.32***)	(.25***)	(.28***)

* $p < .05$, ** $p < .01$, ***$p < .001$

Standardised beta coefficients (β) less than .05 were considered too small to be meaningful, those above .05 as small but meaningful effects, those above .10 as moderate effects, and those above .25 to be large effects (see Keith, 1999, 2006)

FM = Female, M = Male, ESB = English speaking background, NESB = non-English speaking background, Indig = Indigenous, non-Indig = non-Indigenous, Co-Ed = Co-Educational

K.4.8 Noteworthy covariate factors.

Although the focus of the study is on student type (i.e., boarding status), it is appropriate to also note some significant covariates impacting academic and non-academic outcomes (see Tables K.5 & K.6). In terms of *gender* (1 = female, 2 = male) (significant at $p < .001$), boys scored more highly compared to girls on academic buoyancy (β = .07) and competitive learning (β = .15) but lower on homework completion (β = -.12), educational aspirations (β = -.11), emotional instability (β = -.06), and peer relationships (β = -.05). In terms of *age* (at $p < .001$), older students scored higher on maladaptive motivation (β = .16), competitive learning (β = .08), and participation in extracurricular activities (β = .13) but younger students scored better on adaptive motivation (β = -.09), cooperative learning (β = -.11), PBs (β = -.13), homework completion (β = -.15), and parent relationships (β = -.08). *Prior achievement* (at $p < .001$) was a positive indicator of adaptive motivation (β = .16), competitive learning (β = .25), PBs (β = .13), homework completion (β = .15), enjoyment of school (β = .10), educational aspirations (β = .21), class participation (β = .13), life satisfaction (β = .12), participation in extracurricular activities (β = .20), peer relationships (β = .13), and teacher relationships (β = .12), and a negative indicator of impeding motivation (β = -.15) and maladaptive motivation (β = -.09).

Alongside a number of key socio-demographic and prior achievement factors, personality factors were also seen to account for significant variance in student outcomes. Significant at $p < .001$, *agreeableness* was positively associated with adaptive motivation (β = .13), cooperative learning (β = .34), PBs (β = .17), enjoyment of school (β = .20), educational aspirations (β = .20), class participation (β = .14), meaning and purpose (β = .19), life satisfaction (β = .16), peer relationships (β

= .27), parent relationships (β = .27), and teacher relationships (β = .22), and negatively associated with maladaptive motivation (β = -.19).

As with Time 1, *conscientiousness* had an effect on a greater number of academic and non-academic outcomes compared with the other personality traits (significant at $p < .001$), being positively associated with adaptive motivation (β = .39), academic buoyancy (β = .12), competitive learning (β = .13), PBs (β = .35), homework completion (β = .38), enjoyment of school (β = .19), educational aspirations (β = .18), class participation (β = .19), meaning and purpose (β = .24), life satisfaction (β = .22), participation in extracurricular activities (β = .08), peer relationships (β = .12), parent relationships (β = .20), and teacher relationships (β = .21). *Conscientiousness* was also found to be negatively associated with impeding motivation (β = -.12), maladaptive motivation (β = -.32), and absenteeism (β = -.06).

Also significant at $p < .001$, *extraversion* was positively associated with competitive learning (β = .08), cooperative learning (β = .16), class participation (β = .28), meaning and purpose (β = .07), life satisfaction (β = .09), participation in extracurricular activities (β = .11), and peer relationships (β = .19), but negatively associated with emotional instability (β = -.11). *Neuroticism* (significant at $p < .001$), was found to be positively associated with maladaptive motivation (β = .12) and competitive learning (β = .21), strongly associated with impeding motivation (β = .49) and emotional instability (β = .72), and negatively associated with academic buoyancy (β = -.47), enjoyment of school (β = -.06), life satisfaction (β = -.17), peer relationships (β = -.10), and parent relationships (β = -.09). Also of note was the effect of *openness* (significant at $p < .001$) on academic and non-academic outcomes as it was seen to be positively associated with adaptive motivation (β = .14), academic buoyancy (β = .14), competitive learning (β = .10), PBs (β = .06),

educational aspirations (β = .12), class participation (β = .10), and teacher relationships (β = .10) and negatively associated with impeding motivation (β = -.13).

K.4.9 Follow-up inspection of students' attributes.

Again at Time 2, differences in attributes of day students and boarders were assessed using chi-squared analyses and *t*-tests on some factors (e.g. mean age, language background, Aboriginality, parents'/guardians' education, prior achievement, agreeableness, neuroticism, and openness) to establish whether these two groups of students were significantly different in these attributes. As previously reported, significant correlations were found between student status and for age (boarders were older than day students, r =.14, $p < .001$), parents'/guardians' education (day student parents/guardians generally had higher levels of education, r = -.19, $p < .05$), Aboriginality (that for Indigenous students there was a greater likelihood of being a boarder than a day student, r = -.22, $p < .01$), prior achievement (day students were of higher ability, r = -.18, $p < .001$), agreeableness (day students were generally more agreeable, r = -.10, $p < .05$), extraversion (day students were generally more extraverted, r = -.06, $p < .05$), neuroticism (boarders were generally higher on neuroticism, r = .06, $p < .001$), and openness (boarders were generally less open to experience, r = -.13, $p < .001$) but no significant correlations were found between student status and gender, language background, or conscientiousness at Time 2.

Standardised beta results showed that boarders scored higher on adaptive motivation (β = .05, $p < .01$) than day students which is surprising considering younger age, higher parents'/guardians' education, higher prior achievement, higher agreeableness, and openness were positively associated with adaptive motivation.

Boarders also scored higher on impeding motivation (β = .06, $p < .05$) which is understandable given that lower prior achievement, lower openness, and higher neuroticism were all positively associated with impeding motivation. Boarders scored higher on academic buoyancy (β = .03, $p < .05$), even taking into consideration that younger age, higher prior achievement, lower neuroticism, and higher openness being positively associated with academic buoyancy. For PBs, boarders scored higher than day students (β = .03, $p < .01$) which is noteworthy given that younger age, higher prior achievement, higher agreeableness, and openness were positively associated with PBs. Boarders again scored higher on meaning and purpose (β = .07, $p < .05$) despite higher prior achievement, higher agreeableness, extraversion, and openness tending to be positively associated with meaning and purpose. Similarly, boarders scored higher on life satisfaction (β = .06, $p < .01$) even though younger age, higher parents'/guardians' education, higher prior achievement, higher agreeableness, and extraversion, and lower neuroticism were factors associated with greater life satisfaction. As with Time 1, boarders scored higher on participation in extracurricular activities (β = .10, $p < .001$), even withstanding higher parents'/guardians' education, higher prior achievement, higher extraversion, and openness being factors associated with greater participation in extracurricular activities, although their older age and higher neuroticism were also positive factors. Again, as with Time 1 it is worth noting that boarders tended to have significantly more positive relationships with their parents than day students (β = .13, $p < .001$) considering younger age, higher parents'/guardians' education, higher prior achievement, higher agreeableness and lower neuroticism were found to be factors which were associated with positive relationships with parents.

K.5 Chapter Summary

Investigation of Time 2 data again consisted of five key stages analyses. The first stage of analysis demonstrated that the data were normally distributed and scales were reliable. The second stage of analysis demonstrated that the measurement properties were well supported and that the factor structures were sound. The third stage of analysis demonstrated that measures were invariant across groups, and that it was justifiable to pool these groups for whole-sample analyses. Based on this evidence, the data were deemed to provide a sound basis for CFA and SEM of the hypothesised cross-sectional model. The fourth stage of correlational analysis provided preliminary support for the hypothesised model and relationships between student type, covariates, and outcome factors. The final stage of analysis, involving SEM, tested the hypothesised model and subsequently confirmed that the model fit the data well. Findings of the hierarchical model (Step 1), where only student type (day/boarding status) is included as the predictor of academic and non-academic outcomes, and the full hypothesised model (Step 5), were also presented. In summary, multivariate modelling that comprised the appropriate controls for shared variance (amongst covariates and outcome variables) and adjustments for the clustering of students within schools identified a number of significant links between student type and students' academic and non-academic outcomes. Consistent with Time 1 and after controlling for variance in covariates, at Time 2 these significant effects generally favour boarding students. Inspection of standardised betas for Steps 1 to 5 of the SEM analyses shows that generally age, gender, prior achievement, and personality had the strongest effects on academic outcomes. For non-academic outcomes gender, age, prior achievement, and personality had the greatest effects on these outcomes. For a number of academic and non-academic outcomes,

parents'/guardians' education was also seen to play a significant role. As was the case at Time 1, it appears that at Time 2 the bulk of variance in these outcomes is again accounted for by age, gender, prior achievement, and to a greater extent, personality, of which much of this is accounted for by the different attributes of the day students and boarders sample at Time 2. Chapter 7 previously examined the longitudinal profile of student type on students' outcomes to identify whether these outcomes are stable after controlling for prior variance in academic and non-academic outcomes.

APPENDIX L: APPENDICES REFERENCES

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